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New Views from Zoos

Interpretation and Exhibit Design

Conservation Education

Visitor–Animal Interaction

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Audience Research

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From the Guest Editor

Judith White

Zoos are one of the oldest kinds of museums—as old as ancient Egypt, where Queen Hatshepsut kept a small collection of animals, or China, where early princes kept animals in "parks of intelligence."[1] In the Middle Ages and during the Renaissance, European nobles kept a variety of exotic animals and established private menageries to amuse their friends. By the 19th century, a number of zoos were established in Europe and the United States to fulfill scientific and educational goals and were open to the public. However, it has not been until very recently—within the last 20 years—that zoos have taken their scientific and educational missions seriously.

Today, most zoos and aquariums in North America subscribe to the four goals of the American Association of Zoological Parks and Aquariums (AAZPA), the association of zoo and aquarium professionals and institutions. These goals are conservation, research, recreation, and education. Inherent in these goals is a potential conflict between the "serious" aim of conservation and the potentially more frivolous one of recreation, a conflict that can cause identity problems for zoos. Should a zoo be a refuge for endangered animals and a site for serious, scientific study of them? Or should it be a place for public recreation, much as a theme park is? Fortunately, zoos may not have to make a choice but instead can accomplish both goals through another—education.

In recent years there has been an explosion of activity as zoos and aquariums explore new ways to link recreation and education to communicate about conservation. As Janet Jackson-Gould's collection of essays in this issue demonstrates, zoo education has gone far beyond the traditional guided tour. It now includes exhibit design, such as the habitat immersion exhibits at the Bronx Zoo and elsewhere (Sharon Kramer and John Gwynne, Jon Charles Coe). It employs a diversity of media, including high-tech interactive devices (Howard Litwak), low-tech hands-on objects (James F. Peterson), imaginative graphics (Linda Taylor), and dramatic arts (Rosemary Harms). Zoo educators are also applying techniques developed by the entertainment industry to make their programs more appealing to visitors (Catherine Tompson).

The goal of much of this activity, notes Rich Block of World Wildlife Fund, is to teach visitors about conservation. "It might well be argued," he says, "that education will ultimately be zoos' and aquariums' greatest contribution to conservation."

A zoo's living collection poses some unique problems for interpretation. In an art museum it is usually clearly understood that one does not touch the objects. Touching can harm a painting; one is taught to use eyes only. In a zoo the issue is less clear. We have been taught from childhood to touch animals: *Pat the Bunny* is a child's first book; stroking the family cat is a joyful experience. With wild or exotic animals, however, touching may be the wrong way to teach, causing stress to the animal or teaching children negative values. Nancy Hotchkiss reviews this frequently debated issue.

Since the 1970s the International Association of Zoo Educators (IZE) has made it possible for educators all over the world to work together to improve zoo education. Through biennial meetings, the *Journal of the IZE,* and various regional meetings, educators have shared ideas for programs. As a result, there are now U.S.-style volunteers in Edinburgh, Australian theatrical presentations in the United States, and common conservation goals in zoo education offices throughout the world. Lars Lunding Andersen is IZE president and curator of interpretation/exhibits at the Copenhagen Zoo, which is known for its children's zoo and other innovative exhibits. He argues that education should play a central role in zoos, becoming the keystone in the design of animal enclosures and the development of exhibits. In Australia, zoo and museum educators are teachers, seconded from the school system. The result is highly developed school programs, and Christine Hopkins, from the Melbourne Zoo, discusses several of them.

Zoos are among the most popular kinds of public museums, attracting, according to the AAZPA, more than 100 million visitors of all ages each year in the United States. Almost everyone visits a zoo at some time in his or her life,[2] so our clientele is quite diverse, overlapping at various points, I am sure, with different museums. It is generally understood that for the majority the zoo visit is a social outing made with friends or family. Barbara Birney and Carolyn Heinrich give a closer look at zoo visitor demographics and raise some interesting questions about who visits zoos. Their reason is an important one: "A more complete understanding of visitor demographics is necessary if zoos and aquariums are to seriously address their missions." And that brings us back to the big four—conservation, research, recreation, and education. That's what we're all about.

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Notes

1. Emily Hahn, *Animal Gardens* (Garden City, N.Y.: Doubleday and Company, 1967), p. 41.

2. Stephen R. Kellert, *Activities of the American Public Relating to Animals,* phase 2 (Washington, D.C.: U.S. Fish and Wildlife Service, 1980), pp. 50–72. The study, available from the Government Printing Office, was conducted at the Yale University School of Forestry and Environmental Studies.

Zoo Interpretation and Exhibit Design: Two Sides of the Same Coin

Lars Lunding Andersen

The Philosophy of Interpretation

What do we understand by "interpretation"? Freeman Tilden has defined it as "an education activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information." Interpretation starts with an original object or authentic activity. The role of the interpreter is not to tell the visitors something but to provoke them to contemplate and move on from a point in their own sphere of experience. As Tilden puts it, "The interpreter is not primarily a teacher, but a companion in the adventure."[1]

Each individual has a different base of knowledge and a different pattern for acquiring knowledge. It is the interpreter's job to make connections with that knowledge in a way that evokes interest and curiosity. For the interpretation to be effective, it must prompt visitors to go exploring.

The nature of interpretation at a zoo is shaped by the fact that most zoo visitors do not have a very deep or sophisticated understanding of general biological relationships. Zoos cannot expect to interpret highly complex or abstract principles successfully. Zoo visitors will not immediately understand, for example, that animals such as the rhinoceros, the gorilla, and the gaur share endangered status. In the comfortable zoo environment these animals don't "look" more endangered than other zoo animals. An interpreter who speaks on a high level of generalization about endangered species will not make connections with the personal experience of the visitors.

Before visitors can take an interest in nature conservation they have to be interested in animals and plants and have some understanding of basic biological relationships. This is where zoos come in. With their live animals and potential for exciting experiences, zoos have much to offer to stimulate that interest and provide that basic understanding. Zoo interpretation needs to begin with the specific, concrete, and spontaneous experiences the zoo visitors have with the animals. [2]

A good way to understand the various ingredients of a successful zoo visitor experience is to compare the zoo exhibit with theater:

Animals = actors
Enclosure design = scenery
Theme of interpretation = theme of play
Visitors' area = auditorium
Visitors = audience.

In this model, the role of the interpreter becomes that of a playwright or producer. The interpreter is responsible for organizing the visitors' total experience.[3] If the animals are the "actors," naturally interpretation must take place in front of them, as it is the visitors' contact with live animals that creates the interest and desire to dig further into the subject. Interpretation activities not connected to exhibits and live animals do not create experiences with the same impact and consequently do not increase the visitors' knowledge substantially.[4]

The "scenery," or enclosure, is also important in attracting the visitors' attention. Only after interest has been aroused will the visitors read the label—the "theme of interpretation"—and if the enclosure is not successful the label will be of no use, no matter how well it is designed. [5] To have an impact the label must say something that the visitors can make use of here and now. Several zoo studies have demonstrated that when the label messages relate to the spontaneous experience of the visitors with the animals, more visitors read them. [6] As Linda Taylor has pointed out, if visitors read the words "extremely rare" on a beat-up plank of wood alongside a certain animal enclosure it certainly crosses their minds that "if these things are so precious, why doesn't somebody paint them a new sign and scrub that miserable grunge off the fence?" [7] A good label is one whose message spontaneously reflects why it has been put up. [8]

Ideally, the visitors will observe the animals with interest and enthusiasm. They should never feel that they are standing in front of prisoners. If that is the primary aspect of the visitor experience, the labels will not be read or remembered.

Interpretive Models

The philosophy of interpretation subscribed to by the Copenhagen Zoo recognizes that the questions an individual poses are the ones from which he or she learns the most. Choosing the right species and designing the enclosures to allow the animals' natural behavior to be displayed to advantage can often create amusing and exciting situations that capture the visitors' attention and raise questions. The best interpretation provides the answers—either orally during a guided tour or in writing through labels and other printed materials. Providing answers through the second means is more difficult than through the first.

The Copenhagen Zoo has two different interpretation models. In the first the enclosure catches the attention of the visitors as they approach it and directs them to the animals. Then the visitors seek information. In the baboon enclosure, for example, the information the visitors seek is often about the female baboons. "What is wrong with them?" an observer might hear visitors asking. "Why do they have such swollen red behinds? Are they sick?" A label explaining the role the females' red behinds play as a baboon communication signal is perfect.

The second interpretive model assumes the same pattern of visitor behavior. But whereas the first model provides answers to the visitors' spontaneous questions, the second does not always do so. In this model we introduce biological

Lars Lunding Andersen is curator of interpretation/exhibits at the Copenhagen Zoo, Copenhagen, Denmark. He is also president of the International Association of Zoo Educators.

principles that the visitors can verify by looking at the enclosure and animals once again. If the visitors are asked direct questions, the interpretation model is taken one step further.

At the Copenhagen Zoo we use this model for most of our educational and interpretive work. At the wolf enclosure, for example, a label elaborates on the hierarchy of the wolf pack and explains that one can tell a wolf's rank in the pack by looking at the position of its tail. A high-ranking animal wears its tail high, a low-ranking animal wears it low. Visitors in front of the wolf enclosure are frequently observed pointing and discussing the hierarchy of the wolves.

Enclosure and Exhibit Design

Because zoo interpretation begins with the visitors' experience, interpreters must be involved in enclosure and exhibit design and even in the choice of species in the collection. If they are not, their interpretation efforts cannot be successful.

The scope of the animal collection is not, however, a primary basis of the success of interpretation. Most collections permit many facets of animal behavior to be displayed and can illustrate a variety of ecological and ethological principles. Enclosure and exhibit design are far more important. Two considerations are imperative.

1. The enclosure must meet the animals' needs. Only if the animals' needs are met can they to some degree display their natural behavior. And it is the natural behavior of the animals that is the starting point of all successful interpretation efforts.

2. The enclosure must meet the visitors' needs. Even when animals are displaying their natural behavior, physical aspects of the enclosure may prevent visitors from directing their attention to the animals. An ugly fence, for example, may be distracting; so may a dirty pathway or an unpleasant smell. If negative experiences dominate, all efforts at interpretation will be in vain no matter how skillfully they are done. Visitors will leave the exhibit remembering only the negative experience, not the information that was imparted. [9]

From the 1930s to the 1950s, animal enclosures were designed to be functional. They were built of glazed tiles for easy cleaning, and stainless steel bars separated the animals from the visitors observing them. Since the 1950s, zoo enclosures have been increasingly designed to replicate the animals' natural habitats. Where natural materials prove unsuitable, artificial re-creations mimic nature's own shapes.

It is important to understand, however, that a naturalistic enclosure design does not in itself guarantee that the animals' needs are being met. A "naturalistic" enclosure for cats with epoxy trees and a bare epoxy floor void of natural materials of any kind is no better than glazed tiles and stainless steel bars. A "naturalistic" replication of a desert landscape in colored concrete is no better than the bare cage of the menagerie. Enclosures that "look natural" may impress the visitors, but, from the animals' point of view, they may lack behavior-stimulating elements just like enclosures built a half-century ago.

Fortunately, there are now numerous zoos with enclosures that allow the animals to display their full behavioral repertoire. This behavior, in turn, provides the visitors with exciting, spontaneous experiences. These enclosures are not necessarily re-creations of the animals' natural habitats.

For many years there was at the Copenhagen Zoo a large willow tree on the gibbon island, which the gibbons used to swing about in until an autumn storm in 1985 blew it down. As a replacement that would give the gibbons the chance to move in a natural way, we constructed six fiberglass poles connected with nylon ropes and poles. Just like the branches of a real tree, the poles and ropes are springy and yield when the gibbons move and travel hand over hand. Although the old willow was prettier, the new construction has more public appeal. Its long horizontal stretches provide ample viewing opportunities. Because the visitors can see and follow the traveling and balancing of the gibbons, the enclosure is almost "self-interpretive."

There is no doubt that naturalistic design has interpretive strengths. An exciting course of paths in the "wild" that is full of surprises is definitely a good starting point for interpretation. But large complexes and habitat immersion exhibits have drawbacks. The animals are sometimes far away and often difficult to see, especially in indoor enclosures with dense vegetation. A tour through Jungle World in the Bronx Zoo or around the Savannah in the Woodland Park Zoological Gardens in Seattle takes considerable time. From visitor studies we know that after four to seven similar exhibition units the ability to concentrate declines and visitors begin to walk faster. [10] Similarly, studies in museums have demonstrated that the visitors' interest in exhibited objects falls markedly after 30–45 minutes. [11]

It is the interpreter's job to make connections with . . . knowledge in a way that evokes interest and curiosity.

Conclusion

Zoos have great potential for meaningful interpretation. To make the most of what they have to offer, however, interpreters need to be deeply involved in enclosure and exhibit design. It used to be that the job of the interpreter was to put up labels at an exhibit that had been planned by someone else. Those days are over. Successful interpretation requires that interpreters work very closely with exhibit designers, animal curators, and other zoo staff members.

Interpretation now and in the future must be directed to giving visitors memorable experiences. Jon Charles Coe, an American zoo architect, has summed up the ideal in zoo interpretation this way:

> We must integrate context and content. We must examine our ultimate goals and integrate the design of animal exhibits, public areas and interpretive materials to support these goals. We must attempt to align as many environmental stimuli as possible to present a clear, consistent and attractive message to the public, with the hope that this message will enroll their enthusiastic support in world wildlife conservation and captive propagation. The integration of context, content and message requires parallel integration of the efforts of participants in the design of the zoo environment.[12]

Notes

1. Freeman Tilden, *Interpreting Our Heritage,* 3d ed. (Chapel Hill, N.C.: University of North Carolina Press, 1977), pp. 8, 88.

2. Jens Kibsgaard, "Det omgivende samfund som laeremiddel" (The Surrounding Society as a Means of Education), in

Proceedings of the Work Conference: Children and Museums (in Danish) (Copenhagen: Danish Committee of Education and Cultural Action, 1978), pp. 29–37.

3. Lars Lunding Andersen, "Right Enclosure Design: Before Stories Can Be Told," in *Proceedings of the European Zoo Educators' Conference* (Copenhagen: Copenhagen Zoo, 1987), pp. 26–52.

4. Alison L. Grinder and E. Sue McCoy, *The Good Guide: A Sourcebook for Interpreters, Docents, and Tour Guides* (Scottsdale, Ariz.: Ironwood Press, 1985).

5. Beverly Serrell, Tom Brennan, Jill Pliskin, and George Rabb, "Workshop: Current Thinking on Sign and Label Research," *American Association of Zoological Parks and Aquariums 1980 Annual Proceedings* (Wheeling, W.Va.: AAZPA, 1980), pp. 111–26.

6. Beverly Serrell, "Zoo Label Study at Brookfield Zoo," *International Zoo Yearbook* 21 (London: London Zoo, 1981), pp. 54–61; Peggy Chambers and John L. Stanton, "Animal Identification Signs at the Philadelphia Zoological Garden: A Research Report," *Philadelphia Zoo Review* 3, no. 1 (1987): 28–44.

7. Linda Taylor, "Of Potholes and Potoroos," *American Association of Zoological Parks and Aquariums 1983 Annual Proceedings* (Wheeling, W.Va.: AAZPA, 1983), pp. 117–22.

8. Serrell, Brennan, Pliskin, and Rabb, "Workshop."

9. Lars Lunding Andersen, "Interpreting Ethology in Zoos" (Paper delivered at the International Union of Directors of Zoological Gardens, Scientific Session of the 45th Annual Conference, Copenhagen Zoo, 1990). The conference proceedings will be published in spring 1991.

10. Karen A. Hensel, "A New Look at Our Largest Audience," *American Association of Zoological Parks and Aquariums 1982 Annual Proceedings* (Wheeling, W.Va.: AAZPA, 1982), pp. 261–67.

11. John H. Falk, J. J. Koran, Lynn Dierking, and Lewis Dreblow, "Predicting Visitor Behavior," *Visitor Behavior* 1, no. 2 (1986): 7.

12. Jon Charles Coe, "Bringing It All Together: Integration of Context, Content and Message in Zoo Exhibit Design," *American Association of Zoological Parks and Aquariums 1982 Annual Proceedings* (Wheeling, W.Va.: AAZPA, 1982), pp. 268–74.

Conservation Education in Zoos

Rich Block

Zoos and aquariums have been a part of American culture for well over a century, but only in the past decade have these institutions become major proponents of conservation. Clearly, zoos and aquariums have identified themselves as modern-day arks, saving endangered species from the unfathomable fate of extinction and restoring captive-bred species to their native habitats.

While this highly visible work is important and will continue to contribute to global conservation endeavors, it might well be argued that education will ultimately be zoos' and aquariums' greatest contribution to conservation. There are serious limits to how many endangered species zoos and aquariums can realistically save in the name of conservation through captive propagation. In contrast, education programs are not limited by what can be captively bred or managed in a collection. Education programs use each institution's collection as a window through which visitors can explore and examine other parts of the world, endangered ecosystems, and thousands of plant and animal species.

As the world's greatest resource consumers, U.S. citizens need to learn how our lifestyle and consumptive habits affect the world around us. Averaging more than 100 million visitors each year, accredited zoos and aquariums are already beginning to serve as a focal point in their communities for public education about conservation and the environment. Conservation education, defined in its broadest sense, is being approached creatively by these institutions. In addition to traditional education programs and exhibit interpretation, messages about conservation are reaching the public through publications, special events, exhibits, demonstrations, and outreach.

One of the best examples of a publication available on the subject of conservation is the New York Zoological Society's bimonthly magazine *Wildlife Conservation* (formerly *Animal Kingdom*). This periodical not only highlights important issues; it also publishes articles that explore the complexities of resolving conservation challenges and identifies opportunities for readers to take individual action. Today most zoo and aquarium newsletters and magazines routinely carry

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conservation stories of interest to their members and may also point out specific actions their readers can take as consumers or as activists.

Zoos offer an enormous range of special events that help educate their visitors. Conservation Days are a relatively new part of education programs and special events at many zoos, but in June 1991 National Zoo Conservation Day was implemented as a nationwide project of the American Association of Zoological Parks and Aquariums (AAZPA), reaching about 150 accredited zoos and aquariums. In 1987, the Cincinnati Zoo and Botanical Garden pioneered an annual weekend event that focuses on wildlife conservation and brings in local conservation groups as exhibitors and participants. As early as 1983, Cincinnati Zoo educators were creating a program with World Wildlife Fund to discuss the importance of wildlife conservation in a zoo and aquarium setting. Called "Future in the Wild," the program eventually reached 17 other accredited AAZPA institutions. In April 1990, four institutions in the Seattle area—Woodland Park Zoological Gardens, the Seattle Aquarium, Point Defiance Zoo and Aquarium, and Northwest Trek Wildlife Park—collaborated in an area-wide conservation education event that provided public speakers, distributed special handouts and materials to visitors, attracted media attention, and generated local donations to the zoos' conservation programs.

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Now in its fourth year, the Indianapolis Zoo's innovative "Science for Conservation" program puts Indianapolis schoolchildren in direct contact with some of the world's leading conservation scientists. This annual event, capped by an evening of presentations by the scientists, also reaches a large segment of the local population through a series of articles run in the *Indianapolis Star* the week preceding the event.

Leadership and education through action were demonstrated by the Seattle Aquarium's "Adopt a Beach" program, which fostered citizen involvement in cleaning up and protecting Washington's shoreline. In Baltimore, the National Aquarium's Education Department took a leadership role in exploring recycling opportunities within the aquarium as well as the community. Keepers at the aquarium, the Baltimore Zoo, and the National Zoological Park in Washington, D.C., organized a cleanup following the Preakness at the Pimlico Race Track in Maryland that received much local publicity and raised $5,000 for conservation through the recycling of glass and aluminum.

In addition to programs and special events, zoos have developed creative exhibits that focus specifically on educating their visitors. Two examples of early leadership in creative education exhibits are the "Metazoo" at the Louisville Zoological Gardens in Kentucky and "Diversity of Life" at the Toledo Zoological Gardens in Ohio. Each offers interactive challenges and fascinating exhibits while presenting a conservation message. Keepers at the Tulsa Zoological Park took the initiative to create a special exhibit for visitors called "Conservation: It's Up to You." It describes a variety of current conservation issues and offers suggestions for specific actions visitors can take to promote conservation.

Conservation messages are also making their way into animal demonstrations at zoos and aquariums. Information about the ivory trade has become a part of most elephant programs, and discussions of the dark side of the international pet trade have gained attention in bird programs. In addition to the obvious connections, elephants at the National Zoological Park and birds at the Cincinnati Zoo and Botanical Gardens also help carry messages about recycling to the public as the elephants stomp aluminum cans on command and a crow deposits a discarded pop can in a recycling bin. At the National Aquarium in Baltimore, audiences are not only introduced to dolphin biology and behavior in the marine mammal pavilion but are shown the tragic consequences of plastics discarded in the marine environment.

The number of publications, activities, programs, and exhibits in zoos and aquariums that reach visitors with a conservation message is impressive. All institutions, regardless of size or budget, can play an active role in conservation education. In the past five years there has been a flurry of activity to integrate conservation messages into all aspects of zoo and aquarium operations. No longer are they confined to the traditional education department. If recent trends are any indication of what the future might hold, there is much to look forward to.

Current Approaches to Zoo Interpretation

edited by Janet S. Jackson-Gould

From New York to San Francisco, zoos are seeking the most effective approaches to communicating with visitors. These seven essays address issues in the interpretation of zoo exhibits and describe the methods several zoos have chosen to convey their important messages.

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Designed to Be Interpreted

Sharon Kramer and John Gwynne

Imagine that you have reached the steep grasslands of Ethiopia's high plateau. You have come here in search of the gelada baboon, unique in its physiognomy, diet, social relationships, and vocalizations. Because this remarkable primate is found only in a few areas of this geologically remote Afro-alpine life zone, few Americans have ever seen it in its natural habitat.

As you cross a dry stream bed, the overarching tall grasses rustle slightly. Acacia-like shrubs grow on the eroded banks. The hillsides are wreathed in silver-gray plants. You walk further down the cracked mud path, and the sound of rushing water grows stronger. A crude wooden bridge spans a narrow, swift stream. You look up and are rewarded by your first glimpse of the grass-eating geladas. The large male, surrounded by his harem, gazes into the distance; the pinkish skin on his chest turns a vivid red as he flashes his eyelids and flips his lip at an unseen adversary.

But you are not in Ethiopia. You are in the Bronx Zoo's Ethiopian Baboon Reserve, which was carefully designed to educate the public about this threatened habitat. As an organization dedicated to sustaining biological diversity, teaching ecology, and inspiring care, the New York Zoological Society made a purposeful decision to try to re-create the sort of wilderness experience that most of us will never have in our increasingly urbanized world. The multifaceted project was an intense collaboration that joined design consultants and fabricators with the zoological society's zoologists, field scientists, exhibit designers, educators, landscape architects, horticulturists, graphic designers, sculptors, and artists. The challenge was to incorporate both affective and cognitive interpretation methods in the exhibit design.

On an affective level, the Baboon Reserve shows nature in harmony by including two other species: Nubian ibex, which are closely related to the endangered Walia ibex of Ethiopia's high plateau, and rock hyrax, which are endemic to much of Africa. Visitors delight in watching the animals relate. The ideal affective method would have been to enable visitors to walk among the baboons, but concern for the well-being of both primate species in an exhibit designed for an annual visitation of one million people made such a first-hand view impossible. The exhibit planners did, however, assure that visitors do not dominate the baboons' environment but feel like guests there. Several viewing areas were carved into the reserve, using moats and the thinnest acceptable glass as barriers. Care was taken to plant authentic Afro-alpine or analogous plants in both the animals' and the visitors' spaces to equate the two areas as one habitat. All the construction—from the viewing blinds to the small bridges over the stream to the posts that support the graphics—was executed in a rustic way to allow the affective message an uninterrupted flow.

This atmosphere sets the tone for the cognitive aspect of the experience. The best scenario would involve an excellent guide—the zoo director, a field biologist, a curator or keeper—who would interpret what the visitor sees, enhance it with natural history, spice it with anecdotes, and make it come alive in an unforgettable way. The rare visitor is privileged to have such an experience. For the average zoo visitor, the cognitive messages must come from the graphics. The design

challenge of the Baboon Reserve was to convey these messages in fresh, unexpected ways and to make them as interesting as a guide's narrative. The graphics are placed in an Ethiopian-style painted wood setting, with vertical signs supported by rustic posts and angled graphics placed on worn, softly painted planks. Silkscreened panels incorporate sketches made in the field depicting behavior and ecology, which attempt to engage the visitor in learning about geladas.

But even the most sensitive, culturally appropriate graphics do not reach every visitor. Two-dimensional design has limitations in a visually complex environment. To counter this problem and to make the learning experience more individual, the exhibit planners incorporated interactive interpretive methods in the Baboon Reserve. Many of the signs pose questions that encourage visitors discover the answers on the reverse side. Telescopes in one of the viewing blinds afford visitors an even closer view of the geladas and their world.

A "Fossil Dig" adjacent to the Baboon Reserve introduces the fourth dimension—time—by examining our three-million-year-old coexistence with gelada baboons. Cast skulls of ancestral geladas, modern geladas, hominids, and humans enliven this dig for visitors. A cast of the bones of our *Australopithecus afarensis* ancestor "Lucy," herself no larger than a contemporary gelada, adds a human element to the conservation message. The poignant story of the massacre of the giant gelada species by early *Homo sapiens* provides additional food for thought. Interpreting the passage of time in another way is a "Search for the Signs" graphic that encourages visitors to find and understand field marks left by animals such as hyenas, ratels, leopards, and vultures, which in nature would share the geladas' habitat but could not be included in the zoo exhibit.

The Bronx Zoo's Ethiopian Baboon Reserve was conceived as an experiment. Visitors are encouraged to linger and be rewarded by close-up views of fascinating social primates behaving exactly as they do in the wild. On a cognitive level, graphics, footprints, burrows, and even defecation locations transmit the message of how nature works and stimulate the desire to learn more. On an affective level, the visitors' immersion into a total environment in harmony may enable the zoo to plant the seeds of caring for earth's wild places.

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An Integrative Process for Exhibit Design

Jon Charles Coe

To most curators, integration means taxonomy, displaying like with like. But are the display items related? Do they share maintenance needs? Does the display appeal to several age groups and types of visitors? Is it energy efficient, does it improve air quality, and does it smell good? Can it accommodate special evening events, offer photo opportunities for visitors, and provide a backdrop for the local TV station's weather report? Will car dealers promote it and bring their families? Will restaurants feature it on their placemats? That's multilayered integration: a zoo exhibit that is a community resource.

A highly memorable setting incorporating sight, sound, smell, touch, and mood strongly affects visitors' perception of the subject.

Multilayered integration is, first of all, an attitude. It happens because the people in charge are joiners, not splitters, and because it is good business. Zoos and aquariums can no longer afford single-shot approaches. Money is too scarce and time too short. An integrative approach also leads to a richer experience for zoo visitors. Zoos and museums always present objects and information in context, whether intentionally or not. But the context often negates the experience, as when a beautiful tiger is shown in a rusty cage or a delicate mollusk shell is displayed in a crowded hallway. A highly memorable setting incorporating sight, sound, smell, touch, and mood strongly affects visitors' perception of the subject. There is a growing awareness of the value of supportive, integrative context, evidenced in the popularity of contextual displays and walk-through dioramas in museums and landscape immersion displays in zoos.

How is multilayered integration achieved? Here are some pointers:

1. During the planning process, bring all points of view to the table. Each participant must be well grounded in his or her area of expertise, but each should also be quick to recognize mutual benefits or new possibilities.

2. Give everyone a voice. Use a structured brainstorming approach with a strong facilitator so that no one person or group dominates. Create an atmosphere in which it is all right to suggest a crazy idea or a nontraditional point of view.

3. Involve one or more participants who are natural synthesizers and can create alternative visions from a stream of apparently random suggestions. These participants should also know something about all of the fields represented.

4. Make sure someone with authority participates. Dozens, if not scores, of wonderful brainstorming sessions have gone for naught because participants failed to develop a constituency among decision makers.

5. Begin by asking what message you want to communicate. Rather than considering whether to use flat graphics,

dioramas, or computer interactives, ask what you would like visitors to remember or feel about their encounter with the exhibit a month or 10 years later. Will the experience be worth remembering? Will they come back for more? Then consider the best means of delivering the experience that supports the desired message. You may find success has more to do with clean, uncrowded restrooms than with interactive computers.

6. Create firsthand experiences for visitors. A hands-on approach makes believers and changes attitudes. When visitors have a supportive or at least an open attitude toward the display, they will pay attention to information.

7. Create delight. People visit zoos, aquariums, botanical gardens, and museums for recreation and inspiration. Few come for education. Delight can open minds. Inspiration can touch heartstrings. Then new possibilities open and information finds a place to perch.

8. Add layers of function and meaning. Can the context that led to heightened awareness of the primary exhibit communicate with different age and education levels? Can it complement an eating or resting experience? Can it encourage sales of appropriate merchandise, providing revenue to support institutional goals? Can it provide a memorable setting for an evening cocktail party or afternoon corporate picnic that showcases your work to a new audience? Can parts of the display or support items enrich local school curricula, tour sponsoring supermarkets, or nurture zoo programs in third world nations?

We live in the Age of Ecology; we are, after all, "one house." Zoos and aquariums should use this extraordinary realization to reconsider their messages, recalculate their costs and benefits, and restructure their exhibit design processes. Integration at all levels will help them get more from their resources and provide more for their visitors and their communities.

Jon Charles Coe and his firm of architects, landscape architects, and graphic designers, Coe Lee Robinson Roesch, Inc., of Philadelphia, have helped guide exhibit development in zoological parks and aquariums throughout the United States and Canada.

High-Tech Interactive Exhibits

Howard Litwak

In many zoos, interpretation once meant identification signs for the animals on display. Better interpretation meant producing nicer identification signs. In recent years, however, zoos have been seeking ways to communicate more effectively with the public. Encouraged by a variety of factors—including the growing urgency of their conservation message, the greater professionalism of their education departments, the popular success of science centers, and the increased sophistication of their visitors—zoos have begun to integrate interpretive techniques that are commonly used in museums. Among the variety of interpretive elements are high-tech approaches once thought more appropriate to a science center or history museum setting.

A high-tech interactive device is any exhibit information delivery technique beyond the most straightforward graphic or lift-and-drop method.

Recent advances in zoo interpretation were prefigured by William Conway, general director of the New York Zoological Society, in his 1968 article "How to Exhibit a Bullfrog,"[1] which proposed a richness of techniques that no real zoo exhibit has yet matched. Nonetheless, in the past five to seven years many new zoo exhibits—including the St. Louis Zoo's Living World, the Bronx Zoo's Keith W. Johnson Zoo Center, the Cincinnati Zoo's Cat House, the San Francisco Zoo's Primate Discovery Center, and the Los Angeles Zoo's new children's zoo—have employed diverse interpretive elements, many of them high-tech interactive exhibits.

A high-tech interactive device is any exhibit information delivery technique beyond the most straightforward graphic or lift-and-drop method. Examples are computers and audiovisual systems, including interactive video; hands-on devices intended to replicate an animal behavior or sense; and enhanced sound systems that respond in real time to a visitor's presence. In a science center, such approaches are generally consistent with the information being presented; there is no conflict between form and content. In a zoo exhibit, however, a fundamental conflict exists: high-tech elements are not found in natural settings. As a result, many zoo professionals question their appropriateness, regardless of the potential for enhancing visitor experience. When using high-tech devices, exhibit planners must take care that they do not intrude on the natural landscape or on the visitor. Some zoo exhibits place interactive devices in galleries where they do not compete with animal viewing.

Why are zoos using high-tech interactive devices? One fundamental reason is that hands-on activities facilitate learning, a point repeatedly verified in museums. In addition, exhibit planners are aware that even the most naturalistic immersion-oriented habitat provides only a snapshot of an animal's life, not a full picture of the ecological role and behavioral varieties of the animal in the wild. Interactive exhibits can expand the picture; those that use computers

and interactive video can provide information at a variety of depths and interest levels. Finally, zoos increasingly recognize that they are in part in the entertainment business. They must give their visitors a multifaceted experience that will result in a pleasant afternoon, a repeat visit, or a change in awareness, behavior, or position on an important issue.

Lessons science centers have learned about interactive devices are gradually being understood in the zoo world. For example, the sheer cost and complexity of these devices often come as a surprise to zoo staff intrigued by their possibilities. Successful interactive exhibits are, of course, neither inexpensive nor easy to design; prototyping has begun to be recognized as integral to the process. Maintenance costs and the related matter of down time must be accounted for. In the first flush of enthusiasm, many zoos optimistically overlook these considerations. But as zoo staff gain experience in the integration of high-tech elements into exhibits, they will recognize the special issues related to them and consider these issues in the planning and budgeting process.

Note

1. William Conway, "How to Exhibit a Bullfrog," *Curator* 11, no. 4 (December 1968): 310.

Howard Litwak is a principal with Joseph A. Wetzel Associates, Inc., a Boston-based design firm that specializes in interpretive exhibits for museums, zoos, and aquariums.

Low-Tech Interactive Exhibits

James F. Peterson

Interpretation in zoos and aquariums supplies basic information and fosters an attitude of care and appreciation. One interpretive method is low-tech interactive exhibits, devices that enable visitors to use the senses or engage in physical activity. Interactive devices produce positive visitor response, increase exhibit use, and promote retention of information. In zoo exhibits, low-tech interactive methods are preferable to electronic or laser-powered devices. They blend into natural settings, do not require power, and are safe to use outdoors, unattended, or in areas of risk. They can relate well to the animal displays; interpretive text in zoos must often be short and direct, and supportive interactive exhibits share this quality.

The design of interactive exhibits requires the integration of information about the exhibit users with the selection of materials, mechanisms, location, and other design details. Subjective data about visitors—their behavior, values, and attitudes—should be combined with data about the physical attributes of the exhibit user groups to arrive at a profile of the typical user. Then the materials and methods can be chosen. An interactive exhibit should act as designed, when asked, forever. The materials and methods should be appropriate to the task, engineered for reliable operation, and well tested. A rule of thumb is to use the least complex mechanism and assembly that will do the job. Simple three-dimensional objects to discover and handle, items that reverse or flip over, slide doors, and other simple devices are always better than electronic or laser-powered arrangements.

A successful interactive exhibit is easy to operate and forgiving of error. It works every time, and the reward is information or insight. An exhibit that is awkward or annoying to operate or hard to understand will fail to communicate with the visitor. The exhibit dollar is well spent if the exhibit can quickly deliver a short message to many visitors rather than requiring a long time to convey a short message to one visitor. Devices involving lift doors or slides, for example, are quick to use and, if the text is well written, quick to deliver the message. At the opposite extreme are computer keyboards and interactive video systems, which require a substantial investment of time and money for each message delivery.

Zoo exhibits have incorporated low-tech interactive devices with varying degrees of success but with great imagination. Shells, nests, tracks, and other animal evidence are displayed to expand interpretation. Giant webs, nests, shells, burrows, and caves invite participation and role playing. Tools, harnesses, and equipment reveal the relationships between ourselves and domesticated animal species. Horticultural plantings can contain familiar plants or favorite animal food items. All these approaches share the characteristics of simplicity, directness, and appropriateness to the task. An interactive exhibit has succeeded when the message shines through without undue attention to the materials or the medium of presentation.

James F. Peterson is president of BIOS:Inc., a Seattle design consulting firm specializing in exhibit concept planning and design for zoos, aquariums, and museums.

The Use of Humor in Zoological Interpretation

Linda Taylor

Graphic designers faced with interpreting complex scientific information might consider tattooing one guiding rule on each hand: (1) No matter what, keep it brief; (2) Try your best to warm it up. It is my absolute and unshakable belief that information—no matter how important or worthwhile—will be actively ignored if presented in a dry, traditionally "curatorial" mode.

This is not to suggest that we should try to make jokes of serious subjects. Humor often implies a depreciation of fact, and we should never use it to diminish or compromise the importance of science. But if we can use it to achieve a measure of lightness—a gentle seduction—our visitors' interest, concentration, and receptivity to our messages will be greatly enhanced. At the San Francisco Zoo, we have enjoyed record-breaking readership of our graphics due largely, I believe, to our commitment to this premise.

Below are some examples of graphic titles and subheads in which we have attempted to animate difficult concepts with lively language and a spirit of fun.

While the use of humor is personal, subjective, and difficult—maybe impossible—to codify, a few guidelines might be helpful:

■ Never assume that graphics should be more clever, interesting, or beautiful than the subject you've been assigned to interpret. The painting, artifact, rhino, or whale is infinitely more interesting. Your wit and whimsy should be used to direct attention *to* the subject, not *away* from it. Keep this principle in mind during both the design and the installation stages. Don't create drop-dead gorgeous interpretive graphics that block the view of what the visitor is there to admire.

■ Consider local attitudes toward humor. Humor has an undeniably regional aspect: a deliciously witty headline in San Francisco may land on its head in Miami or, worse yet, offend a donor in Topeka. Writers and designers in museums, zoos, and aquariums must bear in mind a sensitivity to the people and politics of their communities—not as a restraining order but as a guiding conscience.

■ Stay alert to the "weights and measures" of humor. In most cases a light touch of whimsy works better than a heavy-handed ladleful of laughs, unabashedly impregnating every line of copy. Use humor as an artist would use a dash of vibrant color—sparingly, wisely, always with balance, style, and good taste.

A paper I presented to the American Association of Zoological Parks and Aquariums in 1982 entitled "Gorilla Gorilla Giraphics" ended with a poem I wrote that still communicates what I believe to be a worthy goal in reaching visitors:

If they looked, but didn't stop
Perhaps they didn't care.
If they stopped, but didn't look,
What they hoped for wasn't there.
If they looked, but didn't see,
We can't help them—not a one.
But if they stopped—and looked—and saw
The job was truly done.

Linda Taylor is curator of exhibits and displays at the San Francisco Zoological Gardens, San Francisco, California.

Koalas

■ Panel on plate tectonics, continental drift, and the impact of geographic isolation on evolution:

A Lucky Break for Marsupials
Breaking up is hard to do and took millions of years, but set Australia apart from the rest of the world . . . an island in time where marsupials could flourish.

■ Panel on marsupial development and differences between marsupials and placental mammals:

Womb with a View

■ Panel on the koala's two-thumbed adaptation to arboreal life:

A Firm Grip on Life
When you sleep in windy trees, two thumbs are better than one.

■ Panel on the difficulty of getting to the pouch:

Fantastic Journey
The koala's journey to the pouch is only 2 inches. But getting there is no easy task. It would be like a 5 foot 8 inch blindfolded person with back feet tied together and hands deep in boxing gloves having only 5 minutes to crawl 15 1/2 feet with mites the size of small lobsters all around.

Giant Pandas

Born to Chew
Crush, crunch, munch. . . . The giant Panda is a bamboo-eating machine.

Sex & the Single Panda
Rarely do they get the urge to merge . . . and that makes them rare!

It's All in the Wrist
Evolution's solution to holding bamboo

Asian Elephants

Of Tummies, Trunks, Tusks & Toes
How Much Lunch Can an Elephant Munch?

Eating to Live, Living to Eat

These Feet Were Made for Walking

■ Panel on conservation:

A Ponderous Predicament for Pachyderms

(This panel includes a section entitled Conservation Conversations to answer difficult questions about the management of Asian elephants in zoos and in the wild.)

Entertainment and Education: Antonyms or Allies?

Catherine Tompson

The last decade has witnessed a strong and growing interest in live animal shows as an educational tool in zoos. Much time and energy—perhaps too much—has been spent debating the use of "show" versus "presentation/demonstration" and "education" versus that remarkable buzzword, "entertainment."

Among zoo staff, the terms "entertainment" and "education" are often considered to be antonyms, but in fact the entertainment industry helps shape many attitudes about wildlife. From the portrayal of Disney's *Charlie the Lonesome Cougar* we learn, for example, that cougar cubs make adorable if somewhat mischievous pets. (They don't.) Such misinformation fuels the educator's belief that zoos must "combat" entertainment with education. The real point, however, is that the filmmakers present misinformation in such a way that it was readily assimilated. Perhaps zoos could achieve better results by presenting their "good" information in as entertaining a format as possible.

What makes a show entertaining? The entertainment industry offers some lessons. Most good movies put the viewer through the gambit of emotions. They sequence light and intense mood segments carefully and attempt to end on an emotional "bang." In an animal show, strong conceptual development plus good dramatic pacing plus audience participation equal an audience that is with you long enough to enable you to drive home your parting message. Audience participation is an important part of pacing. It can take a variety of forms, from silently answering rhetorical questions to visualization, movement, making or listening to sounds, or, in the extreme, touching an animal or artifact. The techniques of involving the audience should be varied and must weigh heavily in the show's pacing plan. Education steers the course, but entertainment drives the program.

Zoos compete with everything from shopping malls to Nintendo for the public's free time. If zoos want their audiences to learn to love, then they must present a message that the public will love to learn.

Catherine Tompson is curator of education at the Baltimore Zoo, Baltimore, Maryland.

Theater in a Zoo?

Rosemary Harms

The average visitor to a museum or a zoo probably does not expect to encounter actors. Across North America, however, museums of all types are showing an increasing interest in the idea that theater can be used as a technique to interpret exhibits. This approach has captured the attention of the public, too. Evaluation study reports presented at the 1991 museum theater workshop at the Science Museum of Minnesota confirm that visitors like it when an institution uses theater to help them better understand an exhibit. Theater as an interpretive technique offers a fresh approach to communicating ideas; showing is better than telling. When a collection of objects or animals is treated dramatically, its educational potential is increased. Theater encourages visitors to use all their senses and get emotionally involved in what they are observing.

Theater as an interpretive technique offers a fresh approach to communicating ideas; showing is better than telling. When a collection of objects or animals is treated dramatically, its educational potential is increased.

As the following examples illustrate, the scope of educational theater in zoos is broad. In exhibit settings, theater need not be limited to the production of a scripted play. The traditional museum demonstration or animal show can be enhanced by the use of theater. Participatory games, songs, stories, the improvisation techniques of street theater and the circus, puppetry, and characterization are all very much the methods of museum-zoo theater.

At the Philadelphia Zoo, the Treehouse is the main stage. Play becomes learning as visitors explore six larger-than-life simulated habitats. Using all their senses and their imagination to appreciate and understand the animals' natural surroundings as well as their own, visitors are immersed in a fantasy world that delivers a real message about the world of nature. The Treehouse troupe of five performers creates and performs daily a repertoire of plays, 10–20 minutes in length, on subjects ranging from the food chain to conservation. The goal is to encourage the visitors to become the animals in this nonanimal exhibit. The summer 1991 presentation, produced with assistance from staff at the Science Museum of Minnesota workshop, is "Nature's Magic." In this original work, which features three live animals, a young boy learns about the interrelatedness of living things from a "magician" (otherwise known as a keeper).

The Philadelphia troupe is still experimenting. Its next goal is to develop programming in which each actor has an individual repertoire of activities to complement and enhance the main plays. The program benefits from outside professional expertise through the Artist-in-Education pro-

gram of the Pennsylvania Council on the Arts, which provides help in scripting and in theatrical techniques such as improvisation, puppetry, and creative drama. As the Treehouse staff become more skilled in the use of theater, they share these methods with the education staff, who in turn are able to enhance their classroom and auditorium presentations.

In addition to the Treehouse, the Philadelphia Zoo has experimented with other theater ideas in the main zoo: a puppet show, street theater in a variety of guises, and, in the summer of 1990, a first attempt at combining theater and an animal show. Zoowalk Theater, a summer program produced by the education department, won an award from the American Association of Zoological Parks and Aquariums in 1985.

An experimental program at the National Zoological Park in Washington, D.C., takes a multifaceted approach to theater, helping visitors see the animal exhibits with new eyes. "Improving Exhibit Interpretation" is exploring a variety of approaches: a professional actor performs a monologue about the young Charles Darwin; performing arts high school students enthusiastically involve visitors in street theater activities; visitors play a game to learn how bats navigate. The one-week summer showcase held in 1990 has been expanded to a whole summer of activities in 1991.

Exciting work is being done at the Minnesota Zoological Garden in Apple Valley, Minnesota, by the education department's Theater in Education (TIE) program. Started in 1983, this program has grown steadily. As costumed characters, the naturalist staff and volunteers interpret three of the five trails at the zoo using short, scripted monologues presented at various sites along the trails on themes such as adaptation and animal senses. TIE also presents 20-minute shows featuring giant puppets seen from a monorail ride; these shows take place on special event evenings such as Halloween and Arbor Day.

Projects such as these at the Philadelphia, National, and Minnesota zoos depend largely on outside funding and donations of time and material. But more important, the key to the success of these programs is a commitment to experiment and a willingness to hire the right personnel to perform or train others. So far, zoos have barely scratched the surface of what is possible. Theater is a perfect way to heighten zoo visitors' powers of observation. It helps them discover new ways of looking at animals. It can create a lasting image for the visitor, an image that can be the catalyst for further learning.

Rosemary Harms is director of the Treehouse at the Philadelphia Zoological Garden, Philadelphia, Pennsylvania.

The Pros and Cons of Live Animal Contact

Nancy A. Hotchkiss

As Ya-El and his family approached the North American tidepools exhibit, his sister exclaimed, "Oooh! This is where we can pick things up!" Though the area was crowded, Ya-El managed to make his way to the exhibit guide, who was holding a horseshoe crab in his lap. The guide explained the proper way to hold the animal and handed it slowly to Ya-El. "Cradle the animal's body with both hands, like you would carry a bowl of soup," he explained. Ya-El hesitated and made a face before taking the strange moving object. The animal's stiff tail was moving, and Ya-El had heard that was its stinger. Sensing the child's anxiety, the guide explained that many people thought that the animal's tail could hurt them, but it really couldn't. Cold salt water dripped from Ya-El's hands as he listened to the guide describe the animal's eyes and mouth. He was amazed to learn that horseshoe crabs have been around since the age of dinosaurs. The guide asked if someone else wanted to hold the animal, and Ya-El gently handed it back. He and his family then moved on to the tropical rainforest exhibit.

Ya-El's encounter with the horseshoe crab was an ideal educational experience: Seeing the "real thing" up close had a positive effect on the young boy, perhaps even for a lifetime. All around the world in zoos, aquariums, nature centers, and museums, live animals are being used as educational tools. The innate fascination that animals hold is being channeled to focus visitors on a specific educational message. By meeting and touching live animals, visitors are learning about life cycles, natural habitats, and food-gathering strategies as well as about the environmental pressures on animal species.

Some critics question the value of animal contact activities, asking for proof that touching animals does make a difference. After all, television, movies, and books are tremendous sources of information and images. Can't they do the same job? This article examines some types of live animal contact, discusses the pros and cons, and notes a few of the research efforts that have addressed the benefits.

Educators have long maintained that seeing (and often touching) the real and unique article has a significant effect on learning and attitudes. Museum educators and classroom teachers alike use object-centered learning as a basis for

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many lessons, beginning with "show and tell" in the early school years. We know from attendance fiqures that visitors will line up for hours to see a rare diamond, sculpture, or painting. The same is true for koalas, pandas, and white tigers. People are fascinated by the rare and the real.

Zoos and aquariums have multifaceted missions that include education, conservation, species preservation, and recreation. Given these high-minded goals, why should zoos have animal contact areas? Robert Bendiner correctly points out that

> if the breeding of threatened species were the whole purpose of zoos [and aquariums], they would do well to say so and then proceed to close their gates to the public. Thus freed from the expense and concern of having to serve the needs and pleasures of zoo-goers, they could devote themselves solely to the art of animal husbandry. But to reduce all zoos [and aquariums] to this single role, vital as it is, would be to cancel out an equally vital purpose, indeed a major reason for their existence. That purpose is to stimulate the feelings for wild animals, which in an increasingly urban society grows fainter by the decade. . . . . Without the occasional eye-to-eye contact with wolves, bears, tigers and such, [people] will see their pictures in an encyclopedia with no more emotion that [they] get from those of archeopteryx or mastodon.[1]

By meeting and touching live animals, visitors are learning about life cycles, natural habitats, and food-gathering strategies as well as about the environmental pressures on animal species.

Visitors to any zoo, aquarium, or museum must become personally involved in order to care about what they are seeing. Without that uniquely individual experience, visitors may just as well be reading a book or watching television. We have the rare and the real, and we owe it to our audience to share our excitement.

In zoos, aquariums, nature centers, and museums, animal contact areas are often the central places for activity, touch, interaction, and discovery. Close-up experiences with live animals can occur in a variety of settings and forms, ranging from highly intimate interactions to programs in which most of the participants are merely spectators. The most common types of interaction include:

- casual visitor interaction in free-ranging "petting" areas. Children's zoos or touch tanks sometimes feature domestic or hardy animals that can be handled or touched. Interaction usually is free-form, with no assistance from a guide or teacher. Some of these areas may have volunteer interpreters.
- small classroom programs for a targeted audience. These programs usually are directed at a single age group, such as a school class or scout troop. The classes focus on a theme, with a teacher directing the pace of the lesson and the animal interaction. In classroom programs domestic or exotic animals may be handled or touched in a controlled fashion.
- auditorium programs or amphitheater shows. Large mixed groups are the audience for these events, which can be held either at the zoo or off site. They may be multimedia programs involving large, dramatic live animals. Selected audience members may have direct animal contact, called "token touch," and then relate the experience to the entire group.
- one-to-one interaction. People interact with animals in the animals' own element or on a one-to-one basis. This type of contact typically occurs in therapy situations such as phobia desensitization programs.

Educators believe that encounters with animals in an animal contact area—whether positive or negative—can have a lifelong effect on visitors. Properly conducted animal encounters encourage positive attitudes toward wildlife in general while increasing the visitor's understanding of the individual animal. Such experiences can generate affection, caring, and concern for the animal on the part of the visitor. Sometimes a visitor's previous negative experiences or phobias are counteracted. And on a practical level, animal contact areas promote proper handling of animals.

Poorly conducted encounters, in contrast, can have long-term negative effects. Let's revisit the tidepool exhibit with Ya-El under different circumstances:

Ya-El and his sister came around the corner into the North American tidepools exhibit. The guide was holding a horseshoe crab in his lap and talking with other visitors at the exhibit. Although the area was crowded, Ya-El made his way to the front to get a closer look. "Would you like to hold it?" the guide asked. Ya-El hesitated. The tail was moving around and he had heard that it could sting you. The guide held the dripping animal in front of Ya-El's face and said, "Can you find the eyes? They are very different from ours." Ya-El jumped back and grimaced. "Oh, gross! Does it bite?" The guide had started a conversation with another family and didn't hear Ya-El's question. Ya-El turned to his sister and said, "Let's go to the rainforest and see the piranhas!"

This description illustrates some of the misgivings educators have about animal contact. An inappropriate encounter with a live animal can be more harmful than helpful, even leading to fear or aversion on the part of the visitor, and it can place stress on the animal. In addition, the way in which the animal is used or the inconsistency of the visual message and the guide's oral message can produce inappropriate results.

Just as museum educators are sensitive to the complexity of handling museum objects, many zoo educators are concerned about the proper use of live animals. To ensure that this form of object-centered learning is appropriate and effective, they consider three important questions:

- What types of messages are conveyed to the participants in animal contact areas?
- What "costs" are involved—animal stress or health risks, improper handing of potentially rare specimens, inappropriate signals conveyed by having animals present for touching?
- Do the educational benefits outweigh the potential costs?

Many studies of human-animal interaction have raised questions about the mechanics and the effectiveness of animal interactions. In the early 1970s Stephen Kellert of Yale University conducted the landmark study *Activities of the American Public Relating to Animals*. This broad study outlined nine types of attitudes toward animals, ranging

from naturalistic (a primary interest and affection for wildlife and the outdoors) to esthetic (a primary interest in the artistic and symbolic characteristics of animals) to negativistic (an active avoidance of animals due to indifference, dislike, or fear). Kellert's research revealed that various activities can encourage or counteract various attitudes. According to his study, people visiting zoos and aquariums were no more likely to care for the animals and their habitats than people who did not visit. These findings led zoos to ask what they were doing to send an inapproriate message to the public and how they could correct the problem.

Other research results (see Further Reading) offer a few guideposts for educators who are planning animal contact activities. Some studies have examined the "attractiveness" of certain species over others. Can you encourage someone to care about bat conservation in the same way he or she would care about the giant panda? Does touching a tarantula evoke the same emotional response as holding a baby duck? Do educators always have to pick the cute, fuzzy animal to make their point? Other studies have looked at the use of live versus preserved specimens as educational tools. Must the visitor touch a live animal in order to become emotionally involved, or will a model or preserved specimen have the same impact? Can a stuffed mechanical tiger instruct the visitor on the power of this predator as effectively as the (sleeping) real thing can? Kenneth Sherwood's study at the Mystic Marinelife Aquarium in Mystic, Connecticut, seems to show that students involved in a live animal interaction may not retain more content, but they do show marked changes in attitudes toward the animals.

Institutions that present amphitheater shows or programs are beginning to look at the effectiveness of the "token touch" system, in which a volunteer from the audience interacts with the animal and describes the experience to the rest of the group. Zoos and aquariums have often chosen this type of animal contact activity as a compromise between the public's desire to touch the animals and the professionals' concerns about animal stress. Does distant, secondhand interaction evoke the same response as direct participation? Are we essentially frustrating those audience members who are not chosen? Other short and long-term research projects are examining such subjects as the use of video versus the use of live animals, audience size and setting, cognitive versus affective learning, and the appropriate visitor age for the first animal encounter.

Outside traditional zoos and aquariums, animal interaction is being used as a form of therapy. Pets on Wheels programs bring domestic animals to health care facilities for interaction with patients. It has been documented that such interaction can improve patients' recovery rate, speech patterns, and socialization. Swim programs with dolphins have been used as therapy with severely handicapped people. At the Dolphin Research Center in Marathon, Florida, David Nathanson is conducting a study to determine the holding power of live animals for people with special educational needs. His results show that students answer questions correctly two to 10 times more often when interacting with the dolphins than they would in a conventional setting.

My own feelings about animal contact are born out of 11 years of working at four institutions, visiting many others, and realizing that I was affected by the early animal contact at my local parks and zoo. I have seen some of the best teaching anywhere connected with an animal interaction. Conversely, I have seen poorly staged interactions that did more harm than good to the visitor as well as to the animal.

A word of caution when considering research results: I believe that a good educator can teach well in any setting as long as he or she is creative and flexible. On the other hand, a poor educator can take the best setting and ruin it. Unless testing and evaluation procedures are tightly controlled for variables, their outcomes must be carefully weighed. We do not know about the intellectual and emotional "baggage" that our visitors bring with them. We can only hope to be a positive link in a chain of events that will lead them to become caring individuals. Each of us must examine animal contact programs in our own settings and draw our own conclusions. The challenge is to ensure that the positives far outweigh the negatives, that these teaching tools are used with respect and encourage the proper attitudes toward wildlife.

Note

1. Robert Bendiner, *The Fall of the Wild, the Rise of the Zoo* (New York: E.P. Dutton, 1981), p.106

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Zoo Education in Victoria, Australia

Christine Hopkins

The Zoological Board of Victoria operates three zoological properties. Melbourne Zoo is a city zoo, almost 130 years old, that displays a wide range of exotic and local fauna. Healesville Sanctuary, 70 kilometers east of Melbourne, exhibits the fauna of southeastern Australia in a natural forest setting. Werribee Zoological Park to the west of Melbourne is an open-range zoo whose major exhibit emphasis is herbivores of the African savannah.

The first education officer was appointed at the Melbourne Zoo in 1969. In 1970 the Victorian State Education Department (later the Ministry of Education and currently the Ministry of Education and Training) seconded a teacher to the zoo. Demand by schools for programs at the zoo led to increases in staffing through the early 1970s. Current staffing levels are 14 teachers at the Melbourne Zoo and four at the Healesville Sanctuary.

The employment of museum educators by the relevant state education authority is unusual worldwide, but it is very common in Australia and particularly in Victoria. It presents both advantages and disadvantages. The Zoo Board Education Service maintains strong links (and accountabilities) with the education community and thereby has access to information and support that a zoo employee may not receive. In turn, this relationship assists the Education Service to be responsive to changes in curriculum policy and to be proactive in the provision of programs.

While some might see difficulties in limiting the pool of potential employees to teachers already serving in the Education Ministry or Catholic Education Office, in fact this situation has made available a huge pool of educational expertise. But a serious drawback of this mode of employment has been the inability to develop public programs to the extent that school programs have been developed. While the Education Ministry would tolerate involvement that had some direct benefits to the schools—in activities such as exhibit design and interpretation, for example—staffing levels for substantial involvement in programs aimed at the community could not be justified at the expense of school programs. In reality, the members of the education staff have shown great commitment to their host institution and given of their own time to enhance public education. Another drawback has been the ongoing threat of staff cuts through the 1980s to the present as funding for education has diminished.

To alleviate some of these financial pressures, the Zoological Board of Victoria and the Education Ministry recently approved a cost-sharing arrangement. The Zoological Board will fund two positions—a teacher and a clerical assistant—through the addition of a head service fee of Aust. $0.90 charged to most students using the Education Service in addition to the Aust. $3.60 entrance fee.

Philosophy

The mission of the Zoological Board of Victoria is "to create positive attitudes towards wildlife and conservation of the world's natural living resources." Just as zoos have had to justify themselves in the area of conservation, so the Education Service sees itself as an environmental educator rather than a natural history educator. This philosophy has been reflected in an increasing diversity of curriculum areas being addressed, including the visual arts, dance, literature, and music.

The increasing urgency of many environmental problems has meant that the service can no longer be satisfied if students leave the zoo or sanctuary with an improved understanding of animals and a positive feeling about wildlife. The students must be motivated to act. We are not, of course, inciting them to commit acts of civil disobedience, but we wish to encourage them to examine their community and their personal behavior and make some changes that will have positive environmental outcomes.

The Education Service's aims address curriculum content, attitudes, and action, and these aims are effectively achieved through face-to-face programs with students at the zoo. Student experiences are planned by the education staff in consultation with the class teacher. The use of live animals is central to all teaching programs at the Melbourne Zoo and Healesville Sanctuary. That live animals are excellent motivators and that they increase the students' enjoyment of programs are without doubt. There is evidence that live animals are more effective in conveying positive attitudes than are artifacts or audiovisual materials. It must be emphasized that the animals are well housed and cared for and handled only by teachers who have been trained. At the Healesville Sanctuary these experiences can extend to the natural environment. The sanctuary's 16 hectares of forest are visited by students as part of programs as varied as forest biology and Australian bush poetry.

Examples of Programs

The following descriptions offer insights into the kinds of educational programs teachers in the Education Service have developed.

Bush Poetry: A Truly Australian Experience

This program, typical of the special programs offered at both the zoo and the sanctuary on a regular basis, is aimed not only at encouraging an appreciation of poetry but also, and perhaps more important, at exploring attitudes toward the

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environment and helping students clarify their own attitudes. The live animals with which the students come in contact are used to elicit feelings as well as observations. The students' descriptions of them are compared with those of early explorers, to whom these animals were alien. Verse relating to the native flora and fauna is examined at sanctuary exhibits and throughout the bush, with short extracts at relevant sites. Students then "happen upon" a man by a campfire (an actor), who invites them to sit down and listen to some poetry. Typically students are spellbound by the poetry and enjoy the discussion when the actor comes "out of character." The success of this program is even more remarkable because of the strength of its appeal to students in the middle secondary years, who are often hard to motivate. Teachers are provided with extensive notes and discussion ideas relating to the poetry used.

Prep Orientation Program

This program serves large numbers of classes. While children on their first zoo excursion are welcomed by a clown and her large pelican friend Pop, teachers and aides are briefed on the contents and use of the activity bags they will take with them as they tour the zoo. Activities vary with each trail. They might include face and arm painting or walking with flippers to mimic "pelican feet." There are also picture story books to look at and specimens such as skins related to the animals the students will observe. Teachers may work through the whole sequence of activities or simply choose among them.

Boobook Owl Literature Packages

These packages include picture story books, special props, and activities that turn the zoo into a literature resource. The class teacher directs these activities independently or as an adjunct to a session with a zoo teacher.

Student Forum

Year 11 and 12 students attend the zoo for two days. Through lectures and workshops, they receive information on a variety of environmental issues. Afterward they work in small groups with an art specialist in dance, graphics, or music to develop creative works that can present an environmental message to students not able to attend the forum.

Windows-on-the-Workplace

In 1991 all year 11 students in Victoria study a workplace, and the zoo is a popular choice. A computer program developed in cooperation with computer education personnel provides students with detailed background on the zoo in general as well as job descriptions and interviews with approximately 70 staff members covering all zoo functions. This program will be sold to schools this year.

Other Programs

Other special programs include an extended dance program for disabled students, an Arbor Week tree planting that provides browse for the zoo's koalas, and World Environment Day.

Organization and Support

To support all these high-quality face-to-face programs, priority is placed on curriculum development and materials production. Publications range from teacher and student materials that complement a specific zoo visit to broad background information and teaching ideas.

It would be unrealistic (and egotistical) to assume that two hours a year of zoo education programs would profoundly change attitudes or encourage action in a large number of students. But the professional development of teacher education ensures that the students can derive the greatest possible benefit from the zoo experience. Most trainee teachers visit either the sanctuary or the zoo during their course, and some participate in a series of extension education services in a range of museums, including natural history and science museums, art galleries, zoos, and nature parks. Individual schools or departments can book a Curriculum Day with the Education Service, during which information is provided on the service itself and on other environmental education resources. Participants often take the opportunity to develop curriculum policy or content assisted by the education staff.

Resource materials available for loan include slides, posters, and "Surprise Packs," which are collections of animal artifacts, photographs, and teaching materials on a range of themes. Another prepared package, called "Zoo Tales," is a thematic collection of children's literature.

A huge number of telephone and letter inquiries are received from students, teachers, and the general public. The office staff and teachers answer these questions, depending on the type of inquiry.

While the Education Service benefits from environmental education networks, there is much to share with other museums. The service is active in the Museum Education Association of Victoria, whose major purpose is the professional development of museum educators. It has also needed to act as an advocate and lobby group to protect the extension education sector from budget cuts throughout its 16-year history. This association cooperates with a national body, the Museum Education Association of Australia (MEAA), whose activities include publishing a journal, providing an annual scholarship, and organizing a biannual conference. The MEAA is affiliated with the Council of Australian Museums Associations, whose role is support and advocacy for museums and museum professionals on a national scale.

Understanding Demographic Data on Zoo Visitors

Barbara A. Birney and Carolyn Heinrich

At first, the review of demographic data from a variety of zoos and aquariums may seem a futile exercise. Most reports offer little more than a list of basic frequency counts and percentages. Questionnaire items are often incompatible, making comparisons difficult. It is not uncommon to discover that important demographic information has been omitted altogether or summed up in one vague phrase. One compelling argument suggests that since each institution is different in nature and located in a different area, demographic comparisons are meaningless.

These observations are valid and certainly daunting. At the other extreme, researchers have attempted to identify the "average" zoo goer. Such attempts tend to homogenize data, making the information less applicable for decision making about programs, exhibits, or services for visitors.[1] While data specific to zoos are scant, it is still possible to approach them meaningfully. One way to think about the audiences of these institutions is to group them by profiles.

This article attempts to provide one context for examining demographic data. We recognize that demographic data presented in isolation hold little meaning for any institution. We are interested in them because of their relationship to other concerns that all zoos and aquariums share.

All zoos and aquariums are interested in the public's attitudes toward wildlife. This first concern enables zoos to think about the challenges they face in developing programs to educate the public in accordance with their missions. In addition, all zoos and aquariums are concerned about visitors' effective use of learning opportunities during their visits. While zoos and aquariums cannot control visitors' prior knowledge or attitudes, they can seek to increase their level of scientific knowledge and concern for the natural world. This second concern directly reflects the institution's ability to carry out its mission.

Between the extremes, one can search for some trends among visitor groups. Treating each survey as an isolated piece of information is as useless as a homogenization of data. To learn what was available from zoo and aquarium settings, we reviewed more than 75 articles about studies conducted in these settings. Available research from other kinds of museums was not used for this article. Since we were interested in presenting demographic factors in a larger context, two factors related to the public's attitudes toward animals and use of interpretive media in zoos are discussed first. We then examine the demographics of some zoos and aquariums for their implications in this context. Age, sex, and educational background are three of the most important demographic factors to consider in examining the public's attitude toward animals. Most studies of children's orientation to animals are confined to one age group.[2] A few studies compare differences among age groups.

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Age and Sex: An Overview

M. O. Westervelt conducted interviews with 267 children aged six to 18 years. Overall, the most common attitude toward animals found in the sample was a humanistic one. Younger children, however, consistently placed the needs of people over animals and expressed minimal concern for the rights and protection of animals. Attitudes that reflected a utilitarian or dominating outlook toward animals decreased with an increase in age. Older children showed a greater tendency to express attitudes that showed an awareness of animals as part of a larger ecological system. Older children also showed more of a moralistic orientation to animals.[3]

In a study intended to examine whether the changes that have been observed in individuals' reasoning about human moral dilemmas could be applied to moral dilemmas involving animals, J. Dunlap looked at how eighth-grade boys and 12th-grade boys responded to moral dilemmas involving animals and found that 12th-graders used more advanced moral reasoning than eighth-graders, suggesting that these abilities continue to increase during adolescence.[4]

Stephen Kellert's national survey of 3,107 American adults offers insight into the importance of age to wildlife issues. Respondents least likely to support species protection were those over age 55. Those most likely to support the protection of endangered species were under age 35. Respondents under age 25 were most willing to shoulder a variety of socioeconomic burdens for the sake of protecting endangered or threatened wildlife.

Kellert's study also examined adults' orientation to animals. Adults under age 25 appeared more appreciative and affectionate toward animals and were more concerned about their protection and less utilitarian in their attitudes. Adults under age 25 attained the highest scores for a humane orientation compared to all other age groups, while those over age 76 scored the lowest in this category.[5]

Sex is another factor that influences the public's attitudes toward animals. The findings with respect to sex differences show strong agreement. First, females appear to be more oriented to animals than males.[6] Second, both female children and adults have a more humane orientation to animals than do males.[7] Males were more likely to have a detached and pragmatic view of animals. Third, the sexes respond differently to different species. Females respond more negatively to animals that are traditionally known as "noxious species," such as snakes or invertebrates.[8] Furthermore, males were consistently found to be drawn to predatory and dangerous animals such as the hawk, tiger, or wolf.[9] Finally, one of the few behavioral studies comparing sex differences in a zoo reptile house is consistent with these general

findings; males reportedly viewed venomous snakes longer than females.[10]

A separate study raises yet another issue, however. No sex differences were found when a Scale of Attitudes toward the Treatment of Animals (SATA) was administered to 187 active Christian churchgoers.[11] The intent of the study was to compare three Christian groups. Could the degree or type of religious participation of both males and females be a confounding factor in the study of their attitudes toward animals?

The importance of sex and age to the public's orientation to animals is clear and must be of interest to all zoos and aquariums. It suggests some of the challenges these institutions face with respect to their visiting public. In response, exhibits have been developed with these factors in mind, and the impact of public interpretation efforts has been assessed. Perhaps the major shortcoming of the studies available in this area is that so few of them report demographic differences, instead referring to visitors in general terms. Still, some common findings emerge.

The findings suggest that the key to understanding age differences in visitors' response to public interpretation is the degree to which both the interpretation and audience are mixed. In studies of live exhibits combined with graphics, no differences for adult visitor age groups were found.[12] When adults and children are compared, children are less likely to read signs than adults.[13] Complex mixes of public interpretation include live exhibits, graphics, hands-on exhibits, and interactive exhibits. In these settings adults spend more time than children observing live exhibits, while children spend more time manipulating exhibits.[14] Groups spend more time in multimedia exhibits than in live exhibits.

A paucity of information is available on sex differences with respect to using exhibits. While no sex differences were found when considering visitors' overall use of interactive exhibits in Brookfield Zoo's Bird Discovery Point, there were sex differences for specific exhibit components.[15] Both T. J. Brennan and Beverly Serrell recorded no sex differences for adults who read graphics near Brookfield's live exhibits.[16]

The age and sex of visitors to our cultural institutions are indeed important. Institutions vary, however, and our understanding of our visitors is not advanced by attempts to describe the average zoo visitor. Indeed, it may be misleading to suggest that the average visitor has a higher level of education[17] or travels in groups of three to four people[18] when a review of the demographic data suggests distinctions among the groups. Without providing specific data, E. Kelsey suggests that the visitor profile at the Vancouver Aquarium in Vancouver, British Columbia, is similar to the average visitor profiled by M. Greene. Barbara Birney's study of visitors to the Brookfield Zoo shows a very different portrait.[19]

Reports on the sex of zoo and aquarium visitors vary with the institution. Comparisons are difficult, since many reports fail to indicate how the respondents were interviewed. At least most samples are large. At San Diego, where the head of household was chosen as a respondent, the ratio of males to females was 50:50. At the Arizona–Sonora Desert Museum in Tucson, Arizona, 48 percent of the sample was female. Both institutions draw tourist populations that probably have a high socioeconomic background.[20]

Other studies, which do not state whether the subjects were self-selected within groups, report that at the National Aquarium in Baltimore, the Metro Washington Park Zoo in Portland, Oregon, the Denver Zoo, and the Philadelphia Zoo females constituted from 53 percent to 56 percent of each sample.[21]

In conflict with Kellert and J. Dunlap's findings on visitors to the Sedgwick Zoo, Wichita, Kansas, the Research Center found that females constituted 66 percent of the sample in a comprehensive study of the same zoo. There were 1,430 subjects in the Research Center's sample, more than 10 times the size of Kellert and Dunlap's sample, which may explain the discrepancy.[22] Almost two-thirds of the visitors to the Santa Barbara Zoo and 64 percent of those to the Brookfield Zoo were female.[23]

Is there a way to make sense of the findings? The explanation may lie less in the socioeconomic background of the individual and more in the way the public uses the institutions. In the communities surrounding the Santa Barbara, Brookfield, and Sedgwick zoos, which have low tourist populations and high zoo use, females may make frequent visits as part of a caretaking tradition.

While zoos and aquariums cannot control visitors' prior knowledge or attitudes, they can seek to increase their level of scientific knowledge and concern for the natural world.

It is frustrating to get comparable data from reports that simply state the mean number of visitors, indicate that most visitors are in nuclear groups, or simply omit the data.[24] Nonetheless, it appears that further research should concentrate not on whether zoos draw nuclear groups but on which institutions are characterized by high numbers of visitors coming in pairs and which ones draw extended family groups of five or more persons. These categories enable one to distinguish among institutions. While the San Diego Zoo reports that only 2 percent of its visitors attend in extended groups, 31 percent of Brookfield Zoo's visitors and 20 percent of Santa Barbara's visitors were in extended groups.[25] Extended groups respond to exhibit areas differently from the way pairs respond.

Data on visitor age groups are more complete. While 60 percent of the adults visiting the San Diego Zoo were 18–39 years old, 52 percent of those visiting the Arizona–Sonora Desert Museum were 17–45 years old. In contrast, 70 percent of the adult visitors to the National Aquarium in Baltimore were under 45 years of age. Seventy-five percent of adult visitors to the San Antonio Zoo were under age 45, and 82 percent of Brookfield Zoo visitors were 18–39, while 83 percent and 80 percent of the adult visitors to the Philadelphia and Sedgwick zoos, respectively, were between 17 and 45 years of age. In sum, institutions may be distinguished by whether they attract pairs or extended family groups and by whether they have proportionately more visitors from older age groups.[26]

Surprisingly, studies may not indicate the number of children that constitute the zoo audience. Kellert's national sample indicated that 38 percent of all zoo visitors were children. At the Brookfield Zoo and the Reid Park Zoo in Tucson, Arizona, 45 percent of each sample was composed of children.[27]

Educational Background: An Overview

The omission of information on visitors' educational background in zoo studies is stunning. Of the 75 studies reviewed for this article, only three contain this information. Educational background has been associated with visitors' satisfaction rating of their experience at the zoo, membership status, the ability to use interpretive guides successfully, attitudes toward conservation management issues, the desirability of purchasing interpretive media in merchandising areas, and visitors' cognitive gains associated with using interactive exhibits.[28]

Greene's assessment that most visitors are highly educated cannot be supported from existing reports. At the Sedgwick Zoo, 78 percent of the adult visitors sampled had completed high school only, and 62 percent of those at Brookfield had this level of education. The shift occurred with respect to the number of college graduates, since both institutions have few visitors with graduate degrees (10 percent and 11 percent, respectively). At the San Diego and Philadelphia zoos and the Arizona–Sonora Desert Museum, approximately 40 to 43 percent of the respondents had completed high school only. However, half of San Diego's sample and 44 percent of Philadelphia's sample had completed college. The Arizona–Sonora Desert Museum had proportionately fewer college graduates, but only because 25 percent of the sample had attained a graduate degree.[29]

We began this article with some observations about the importance of demographics to understanding the public's prior attitudes toward wildlife and the differential use of exhibits by individuals. There is a critical need for information about the educational background of our visitors. Kellert found that of all the demographic variables, education was the most sensitive indicator of concern, knowledge, and respect for animals. A more complete understanding of visitor demographics is necessary if zoos and aquariums are to seriously address their missions.

Notes

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Books and Exhibits

Museum Education: History, Theory, and Practice, edited by Nancy Berry and Susan Mayer. Reston, Va.: National Art Education Association, 1989. Paper; pp. 257; NAEA members $14, nonmembers $19.

Reviewed by Danielle Rice

A museum director once commented that instead of the usual "Art Object of the Week" gallery talk format, museum educators should experiment with more dramatic means of communicating their passion about art. How about "The Faint of the Week," he proposed. To enact this program, position a museum educator, convincingly garbed as a museum visitor, in front of a strategically located work of art. When there are a number of unsuspecting visitors in the gallery, have the museum educator fall into a dramatic faint and have a member of the security staff come and, with much flourish, drag the limp body away saying, "That's the third time this week in front of that painting; I wonder what it is about that piece?" This would, of course, ensure the complete, unwavering fascination of all the innocent bystanders in the gallery, who would immediately be drawn to undertake a serious, if somewhat wary, scrutiny of the designated object.

As museum educators, long a much-celebrated but nevertheless underdog class of museum personnel, we are sometimes rightly accused of too much passion and not enough humor. We take ourselves so seriously that we sometimes risk alienating the very people we need to work with to accomplish our goals. But this humorlessness, born of a certain defensiveness, comes partly from a sense of responsibility for righting many of society's wrongs through our work. I have elsewhere argued that the reason museum education often takes second place has less to do with the inadequacies of individual museum educators than with the underlying institutional value system that places ownership of art objects over and above public service. Located within conservative institutions, museum educators are often painfully aware of the paradoxes of educating and advocating for a lay public within a context that is frequently ill suited to cater to visitors' needs.

It is therefore heartening to be confronted with the optimism of Nancy Berry and Susan Mayer's commendable collection of essays. The editors optimistically proclaim in their introduction that, given the imperative destiny of democracy—the theory that most progressive societies seem to move toward increasingly representative forms of government—museum education is "*destined* to keep growing. . . . Because education empowers the people, any museum tempted in other directions ultimately will get back on the track of strengthening and developing its educational mission." Certainly their thoughtful anthology of essays on the history, theory, and practice of museum education is an important contribution to this democratic imperative, yet it does not do much to change the image of museum educators as a committed but somewhat self-righteous and humorless bunch.

We are advised to read the essays in the sequence in which they are published, moving from theory to practice and finally to evaluation. The first chapter—Terry Zeller's "The Historical and Philosophical Foundations of Art Museum Education in America"—is the longest and one of the most interesting and informative. It is followed by theoretical essays on museum teaching, strategic planning, and education of museum education professionals by Ellie Bourdon Caston, Michel V. Cheff, and Anne El-Omami respectively. The practical essays on docents, participatory learning, art criticism in the museum setting, teachers and resource centers, and automated systems for museum education make up the second half of the book. A concluding chapter by Randi Korn provides an excellent introduction to the theory and methodology of evaluation and acts as a good reminder that to improve and refine practice we need reliable ways to measure effectiveness.

Terry Zeller interweaves the history of museum education in America with the political, social, and intellectual history of the United States from the birth of museums in the late 19th century to the present. He links the development of museums with the industrial and commercial expansion that took place after the Civil War and gives an eye-opening perspective on two seemingly paradoxical concerns that have shaped museum practice in America: on the one hand, the need for museums to combat the materialism of American life by providing a place for spiritual and emotional renewal and, on the other, the desire to have museums instruct industrial workers to produce well-designed and tasteful goods. Zeller traces what he calls a "deep vein of pragmatism" that has affected art museum education by putting the emphasis on the practical educational benefits museums provide to the public.

Zeller's thorough research in primary sources adds to and amplifies the often-told story of the history of museums. For example, it is common to cite Benjamin Ives Gilman of the Boston Museum of Fine Arts as the most articulate proponent of the "Aesthetic" philosophy of museum education and to contrast this approach with that of John Cotton Dana at the Newark Museum. Zeller introduces us to Edward S. Morse, who also worked at the Boston Museum of Fine Arts, and to George Brown Goode of the Smithsonian, and shows us that the "Educational" philosophy of museums has very deep roots. He adds to these often-contrasted roles a third position: the "Social Mission of Museums," based in the social welfare programs of the New Deal. Paul Rea's *The Museum and the Community* (1932) is not commonly cited in the history of museums literature, and I was pleased to

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learn of this early author's insistence that neighborhood branches, not larger main museums, would serve the interests of the community better.

Having traced the underlying philosophies of museums in general, Zeller places education in the context of these ideas and describes in some detail the three museum education theories that correspond to the three museum philosophies cited above: the Aesthetics/Art Appreciation Philosophy, the Art-Historical/Interdisciplinary/Humanities Philosophy (treated by Zeller as one interdependent unit), and finally the Social Education Philosophy, whose goal is improving the quality of everyday life. Zeller traces the development and use of these theories from the "Populists and Progressives, Pragmatists and Social Darwinists" of the late 19th and early 20th centuries to the move for relevance and social consciousness of the 1960s and 1970s. The wealth of primary sources that Zeller cites, with much more care given to museums from the Midwest than in most major publications about the history of museums, provides a rich historical portrait of museums throughout the country and gives museum educators added perspective on their own deliberations while it humbles us into realizing that there's nothing new under the sun.

Following Zeller's informative history is Ellie Bourdon Caston's chapter, "A Model for Teaching in a Museum Setting." Moving beyond the obvious assertions that museum teaching centers on authentic objects, Caston presents a clear and well-organized model that considers the philosophical underpinnings of three components essential to museum education: the museum, education, and the subject area, which in the case of art museums is art appreciation. Caston outlines the elements of each component. Museums, for example, contribute three essential elements to the development and implementation of museum education programs: the use of authentic objects at the center of the museum education experience; the presentation of the museum's purpose and its functions; and the use of an interdisciplinary and humanistic approach to learning. While Caston contributes little that is new to the thinking about museum education, the organization she provides is useful. I also especially liked her reminder that it is essential to teach not only about the objects in museums but about the museums and their underpinnings themselves.

Unfortunately, in contrast to Zeller's clear, journalistic prose, Caston's writing is dense, pedantic, sexist (only the male pronoun is used), and peppered with odd little formalities, like referring to herself in the third person, which give the whole essay a pretentious, academic air. This may partly be explained by the fact that the chapter is related to the author's doctoral dissertation. Caston's well-thought-out mode for art museum education would greatly benefit from a more "reader-friendly" presentation.

It is a pronounced relief to move from this chapter to Michel Cheff's direct and personal essay on strategic planning. Cheff's enthusiasm for the process he describes comes through very clearly and inspires readers to run out and follow his simple, step-by-step approach to strategic planning. I did, however, regret that Cheff fails to clarify who is supposed to undertake this kind of planning or how long the process should take. Does the manager undertake this process while sitting in a room by herself, or is a group of people involved? If so, who should participate, and what should their roles and responsibilities be? Should museum educators who do not manage large departments undertake strategic planning? These are questions largely left unanswered.

Anne El-Omami's chapter, "Educating the Art Museum Educator," begins with a review of recent thinking among museum professionals regarding the responsibilities and training of museum educators. Her summaries of the results of the survey undertaken by the Education Committee of the Association of Art Museum Directors in 1986 and of the report of the Denver Meeting of Art Museum Educators in 1987 regarding training are very useful. El-Omami analyzes these diverse results and produces a very clear plan for a master of arts degree in art museum education, which would include course work in the following areas: theory and practice of art, Western art history, Asian art history, graduate research seminars, art education curriculum, educational psychology and research, and curriculum development. The course work would be completed by an academic year internship and a written thesis. This model is ideal, but one wonders whether there will ever be enough of a job market for art museum educators to make it feasible for any university to put such an ambitious program in place.

Sue McCoy's article on docents begins with a very interesting history of volunteerism in art museum education but, in contrast to earlier chapters, suffers from a lack of hard data. McCoy suggests that museum teaching, defined as interactive and participatory, is not the forte of volunteer docents who, for the most part, still deliver commentaries and lectures. She points out that for most docents service to the community is less of a motivating factor for their volunteerism than self-enhancement and suggests that this disjunction may cause strain between professional staff and volunteers. She recommends initiating and implementing more consistent methods of evaluation for docent performance.

Three essays provide especially practical suggestions in three important areas of museum education: participatory learning, programs for teachers, and audiovisual programs. Susan Sternberg's essay on participatory learning is a good review of all the various techniques, including creative drama, storytelling, creative writing, self-motivated games, hands-on and inquiry-method learning, used by museum educators in the past and present. Kathleen Walsh-Piper's chapter on teachers and resource centers wisely recognizes the need to serve teachers as an adult audience as well as helping them with their class tours. She includes several useful suggestions for developing teacher programs. William Howze's review of the broad range of nonprint media available to museum educators, while it does not prescribe that educators abandon more traditional techniques, gives a very practical and up-to-date survey of alternative options in use today.

The only two contributors who come from outside the museum education profession but have had a lot of contact with the field are Robert William Ott, a professor of art education at Penn State University, and Randi Korn, an independent consultant in program evaluation. Ott, well respected in the art education field, helps bridge the gap between art edu-

cators and art museum educators by showing how criticism is a necessary component of art education that lends itself particularly well to museum teaching. At first a little baffling in its orientation, since museum education is seen primarily as a complement to making art in the classroom, the chapter made more sense once I realized that its primary audience is art educators rather than art museum educators. I was unfamiliar with the terms "thought watching" and "image watching," which Ott discusses as if these were completely familiar techniques of critical thinking. Ott never fully defines "thought watching" since he is more interested in "image watching." Five categories of activity go into image watching: describing, analyzing, interpreting, funding (meaning adding more information), and disclosing (meaning making a new work of art). While I found the process of "image watching" Ott describes to be consistent with the objectives of museum education, I have to confess I was rather put off by the term itself. Watching, as opposed to looking, implies a passivity reserved for television, and I was reminded of the man overheard in an exhibition reassuring his wife that he was indeed busy "watching the paintings." Perhaps Ott would applaud this viewer, but museum educators cringe at the thought.

Randi Korn's "Introduction to Evaluation: Theory and Methodology" is the one chapter from which I, personally, learned the most. Korn gives a brief history of the field of evaluation. She makes a clear distinction between evaluation and research regarding visitor behavior, and she defines two paradigms in the evaluation field: the scientific and the naturalistic. She then goes on to detail the techniques used in each of these methods. This gave me as a potential consumer of the evaluator's services an excellent preparation for selecting techniques most in keeping with my own philosophy and interests. I only wished that Korn had added to her otherwise excellent article examples of particular museums where some of these techniques had been tried and tested.

As with any anthology, it is difficult to determine precisely who the audience for this book is intended to be. Because it is published by the National Art Education Association, the book is consistent with this organization's goals and takes into consideration the special needs of art educators outside the museum. This is particularly evident in Ott's chapter. On the other hand, the book seems to be determined to answer allegations made in recent years that museum education is a field largely lacking in theory and philosophy, hence one detects a slightly defensive tone in the editors' introduction and in the essays by Zeller and Caston. The practical essays are largely geared to museum educators but have little content that would be considered new by experienced professionals. For incoming professionals these may prove to be very valuable. This is not the book museum educators have all been waiting for to hand to their directors saying, "Here, read this book and take note. This is what museum education is about." Nor could one share this book with docents who, in reading it, might resent being written about like the permanent "other"—the "them" and not the "us"—in museum education.

While it does many things well, there are a number of issues currently affecting museum education that this book does not touch upon. With its emphasis on history, theory, and practice, there is regrettably little room for some of the more interesting and controversial problems confronting the field today. The emphasis on multiculturalism and museums' responsibilities in exhibiting as well as instructing diverse cultures and their sometimes conflicting values is not dealt with. The role that museum education plays in a world where people have become passive consumers of culture without being active participants is not addressed. In an era in which museums are increasingly seen as leisure time recreational centers, museum education is experiencing pressure to turn from teaching to programming. At the same time, museum educators are often expected to make up for the museum's inaccessibility by providing outreach programs to a broad range of audiences. How these activities, programming and outreach, affect the museum educator's educational mission is another pressing issue that should be discussed.

As a seasoned museum educator, I longed to have more information and new ideas regarding these complex, current concerns. I found Zeller's article, with all its new information about long-forgotten movers and shakers in museum education, to be the most inspiring. Korn's clear and well-organized introduction to the field of evaluation, a field that I knew little about, was the most useful. And I have already sent a copy of El-Omami's chapter to the dean of a local university interested in starting an M.A. program in art museum education. I suspect that the book will mostly become a required text in academic programs dealing with museum education. Used as such, I fear that, despite its thoroughness, it will communicate neither that sparkle of delight and surprise that many of us feel when we successfully communicate the magic of a work of art to a bright-eyed young person—that "aha" experience that keeps so many of us old-timers still going strong—nor the more interesting and controversial problems affecting museum education today.

Learning and Learning Disabilities: Explorations of the Human Brain, Museum of Science and Industry, Chicago, a new permanent exhibit opened in spring 1989.

Reviewed by Beverly Serrell

Upon hearing that the exhibit *Learning and Learning Disabilities: Explorations of the Human Brain* was being considered in the AAM Curators' Committee Second Annual Exhibit Competition, I went to have a look. When it won first place, I visited it again in May 1990, this time in the company of three other museum pro-

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Beverly Serrell is director of Serrell & Associates, an exhibition development and evaluation firm based in Chicago. She is the author of Making Exhibit Labels, *published in 1983 by the American Association for State and Local History, and she recently helped write and edit the Association of Science-Technology Centers' new book* What Research Says about Learning in Science Museums *(1990). She thanks Kathleen McLean, Paulette McManus, Sam Taylor, and Ken Yellis for their suggestions.*

fessionals (one designer, one developer, one writer). My companions echoed my initial reactions as we did our own informal critical peer review. It was not obvious to us why *Learning* had received the award. Maybe if the judges had visited it, too, it wouldn't have.

Learning is not an exhibit of objects and artifacts; it is an exhibit about complex processes and functions. The question, "Should this be a museum exhibit in the first place?" must not have been extensively debated by the exhibit planners or surely they would have concluded, "Perhaps not." In physical scope the exhibit is not too big, but in concept it is.

At the very least, *Learning* should not have been *one* exhibit. There are really two main subjects here (the first clue is the double title), and the two don't even seem to relate that closely. "We always wanted to do an exhibit about the brain," an exhibit developer told me, "but we never had the money. Then we got a grant to do one on learning disabilities." The result is a schizophrenic exhibit; the link between the two parts never gets forged. That might be all right if the two elements were treated as discrete designs, but the whole exhibit looks and feels the same throughout, except for one corner where the installation seems to be more focused on brain anatomy and function than elsewhere.

Most of the exhibit consists of six two-sided island pods that deal with 12 different activities related to learning or brain function (e.g., writing, reasoning, remembering, recognizing faces). Some pods explain how a person with a learning disability has difficulty with that activity. Along the back wall is a black-background photomural of ghostly looking people (of different ages, genders, and ethnic origins), all painted stark white (including their clothes) except for their eyes, which look like spooky black holes. The figures have messages about learning disabilities. What was this mural meant to communicate? I missed the point. One of my colleagues remarked, "My brain doesn't see things in black and white."

Many labels are disguised as interactive devices. Labels on panels slide into slots (12 labels per pod), and the visitor is supposed to grasp them, one at a time, and lift them up to read what they say. There is a "teaser" question visible at the top of each label panel. Several weaknesses stem from this system:

1. The labels are heavy, hard to lift, and awkward to hold in place for reading. Some are stuck in their slots and cannot be lifted.
2. The questions at the top did not seem to relate to the copy below.
3. While the text language was simplified, the concepts were still quite difficult to grasp, follow, and relate to the activities of each pod. They seemed more like depositories for "what the curator knows."

But let's go back to the beginning. This is an exhibit that needs *and has* an introduction to state its themes and guide the visitor about how to relate to the exhibit. It is a good introduction, in the form of a nice, short video, but it is marred by the fact that the exhibit does not have one obvious entrance. In fact, there are two ways to approach it from nearby exhibits, with no walls separating them. So while there are two introductory video areas, they are both very easy to ignore.

I wondered what proportion of the audience actually stopped for the introduction and understood why the exhibit's graphic theme looked like a birthday party. How many of the pods did people visit? How long did they spend in the exhibit? Did they understand what it was about? The AAM Curators' Committee competition guidelines listed "measurements of audience response" as *optional* material for entry submissions.

As far as my reactions to the interactive games, computers, and videos go, I found I spent too much time trying to figure out what to do and left wondering if I had been right or wrong. Overall, after visiting this exhibit, I felt like maybe *I* had a learning disability I'd never been aware of.

Several of the units were showing wear and tear. Besides the stuck labels, one monitor was down. There were no "out of order" notices apologizing for the inconvenience. One of the interactive components "never worked right, from the beginning," according to the exhibit fabricator.

But all this sounds so negative! Why? *Learning* had been awarded first place in the Curators' Committee competition, so I expected something much more—something really clear, satisfying, memorable, involving, surprising, and polished. Instead, it is an exhibit that probably deserved first place as it was presented and reviewed on paper—but not as a 3-D visual communication experience. It is well conceived and treats a worthwhile topic in a humane and socially conscious way. It is also scholarly and complete, offers interactive components, and appeals to a variety of learning styles and modalities.

The most interesting idea—one not clearly apparent in the visitor experience unless someone draws your attention to it—is that some of the activities are conceptually designed to exercise the visitor's brain in the functions that are the subjects of pod units. For example, "Paying Attention" consists of a video screen with a very boring task—counting train cars as they pass by a road intersection. The visitor's mind easily tends to wander—it is hard to pay attention!

The best-executed part of the exhibit, on the other hand, is a series of three videos along the back wall. Each presents a talking head—people talking about their disabilities and how they feel about themselves. It was interesting, moving, and informative—and it was stunningly simple and effective.

When I asked one of my colleagues, "Who do you think this exhibit is meant for?" she replied, "People studying for a psychology master's degree program." In other words, the exhibit did not feel as if it was meant for us. The same criticism can be lodged here as in many museums: it is an exhibit designed to present information to some fantasy visitor in the curator's mind. Until the exhibit planners put the real visitors first, instead of the subject matter, they may impress each other, but they will never win awards from visitor advocates like me.

Notes from EdCom

Nikki Black

Three interesting trends seem to be emerging in museum education. First, research data increasingly are showing the power of human interactions in facilitating learning in museums. Second, as more museums acknowledge that the informal learning that takes place in museums is different from the formal learning that occurs in schools, greater credence is being given to the social aspects of museum visits and the personal meaning that visitors create for themselves. Third, as museum educators acknowledge the validity of the learning style preference concept, our eyes are being opened to many different interpretation opportunities.

One interpretive technique that builds on these three trends is live theater. Those who have had the pleasure of experiencing well-presented theater in museum galleries know that dramatic presentations can carry visitors into another dimension, far beyond that afforded by demonstrations and role playing. Like a good novel, theater uses good stories to capture our minds and hearts. I know I'll never forget my first experience with theater in a museum: the ethereal voice of Nuestra Señora de Atocha, the spirit of a Spanish galleon sunk during a hurricane off the Florida Keys in the 1500s.

Theater integrated into the total exhibit scheme isn't new by any means, but as an interpretive technique it is really just coming into its own. (The articles in the spring/summer 1990 issue of the *Journal of Museum Education* are testimony to the appeal of theater, as is Rosemary Harms' essay about theater in zoos in this issue.) While many have recognized the potential of theater, far fewer have been able to support it on an ongoing basis. One museum that has is the Science Museum of Minnesota, which for 20 years has not only maintained a theater department but has actually made stages and sound systems an integral part of the exhibit design package.

It seems fitting, in the 20th anniversary year of the museum's theater department, to acknowledge an exhibit interpretation technique that may not be new but certainly is appropriate for our changing ideas about how learning occurs in museum exhibits. Tessa Bridal, director of the theater department at the Science Museum of Minnesota, tells the story:

> Twenty years ago a young woman named Sondra Quinn was hired as a guard by the Science Museum of Minnesota. She had not applied for the job. Her intention had been to pursue her educational goal of teaching through theater. Since this was a novel idea for a museum setting, there were no funds for it. There was, however, money to hire a guard. So Sondra donned a uniform for part of the day and for the rest planned her one-woman programs. She started by presenting puppet shows on the Anthropology Floor and 17 years later was vice-president of public programs and visitor services.
>
> During those 17 years, Sondra saw to it that theater at the Science Museum became not only an accepted part of the museum's interpretation strategy but merited its own department, with a director, actors, playwrights, costumers, and designers. In 1985 Sondra supervised the organization of the first annual workshop on the use of theater in museums. Since then, staff from more than 50 museums, zoos, and aquariums have attended the workshops.
>
> In 1991 we are celebrating 20 years of the use of theater in museums, and it is fitting to acknowledge that it was Sondra Quinn who started it all. Without her, actors disguised as vegetables, historical buildings, water drops, and assorted animals might not have graced exhibit halls, and curators might have been spared the fear of seeing their galleries turned into circuses.
>
> With her, millions of children have seen their first live performance in a museum, people of all ages have been exposed to characters, situations, and issues not covered elsewhere, and a whole new field of theater—museum theater—has been established. It isn't often that we can trace a new movement in education directly to its source. With the use of theater in museums, we can. As W. S. Thayer said, "No bubble is so iridescent or floats longer than that blown by the successful teacher."
>
> Please join Tessa and me in celebrating the bubble Sondra Quinn blew 20 years ago. As Tessa says, "It floats before us brightly, reflecting Sondra's vision, her dedication, and the thanks of all of us to whom her work has brought accomplishment and joy."

Nikki Black is exhibits planning director at the Children's Museum of Indianapolis and chair of the AAM Education Committee.

From the Editor-in-Chief

Susan Nichols

Sheep to Shawl

Several years ago, as a museum education intern at Sully Plantation in northern Virginia, I assisted with the presentation of "Sheep to Shawl," a popular morning-long program that introduced fourth graders to the process by which cloth is made from sheep's wool. The program title was at once a descriptive phrase and a clever marketing device, and it has become my professional shorthand for a step-by-step process. I use it here to explain how an issue of the *Journal of Museum Education* comes into being and demonstrate that issues do not spring Minerva-like from the head of the Editorial Committee. In fact, each one is a team effort, routine in its components but complex in the makeup of the players, their experiences, and their approaches to the issue's theme and the logistics of journal production.

In laying out the process from concept to product, my motives are not entirely selfless. I hope that some readers will choose to act as a result of reading this description by submitting articles, proposing issue topics, or nominating colleagues to the Editorial Committee. The article review process is rigorous due to our editorial standards, the limited number of issues, and the glorious range of theme possibilities within the rubric "museum education." Still, the journal must reflect its readers' interests, and thus readers should participate as authors, guest editors, Editorial Committee members, and "idea people."

The *Journal of Museum Education* has been published since 1973 by the Museum Education Roundtable (MER), a nonprofit professional organization founded in 1969 and dedicated to the use of museums and cultural institutions as educational resources. The journal is published three times a year: winter (February), spring/summer (June), and fall (October). Two issues are 24 pages in length, and one is 32 pages.

The journal's frequency and appearance are directly related to its circulation; more subscribers result in more revenue and the opportunity for expanded size, increased frequency, or enhanced appearance. A higher subscription rate is another means of increasing revenue to permit those changes, but that is not the preference of the MER Board of Directors. As of April 1991, the journal's circulation was nearly 800.

The journal's Editorial Committee includes three members appointed by the Museum Education Roundtable Board of Directors and three members appointed by the chair of the AAM Education Committee (EdCom); the MER Board appoints the editor-in-chief and the review editor, who are ex-officio members of the committee.

How does an issue of the journal move from "sheep to shawl"? Suggestions for topics and authors can come from the Editorial Committee or from readers. For a number of years the committee has used a thematic approach to planning issues. A museum professional who suggests a theme is asked to submit a brief written proposal to the committee describing the idea, explaining why the focus is important for publication, and identifying potential authors. If the proposal is accepted, its author often serves as guest editor of the issue. When Editorial Committee members suggest themes and candidates for guest editors and authors, the editor-in-chief follows up with the search and invitation.

The Editorial Committee considers themes twice a year: at the annual meeting of the American Association of Museums in the spring and by memorandum or conference telephone call in late fall. In allocating issues to themes, committee members ask: Has the journal or another publication addressed the subject before? If so, how recently and in what way? Does the theme have wide reader interest and applicability? Is there recent research to report? Is there a timely focus or event, such as the International Year of the Child, for example, or a conference on art education? Themes of upcoming issues include the report of the AAM Task Force on Museum Education (fall 1991), the state of professional practices (winter 1992), and the exhibition as educator (spring/summer 1992). Issue themes are pinned down about two years in advance.

Once an issue theme is selected and the guest editor on board, he or she determines the final contents—usually four to six articles balancing theory and practice—and invites authors to write on the topics proposed. The guest editor also sees that deadlines are met and contributes a brief column, "From the Guest Editor," that introduces the theme to the readers. Each guest editor and author is expected to comply with the journal's general editorial policy and with each issue's special requirements.

In addition to the articles related to the theme, each issue includes a book or exhibit review, columns by the MER and EdCom chairs, reports on MER meetings and other MER news, and a column called "Noteworthy." Other articles, related or not to the issue theme, might also be included. Deadlines for articles are February 15 (spring/summer issue), May 15 (fall issue), and September 15 (winter issue). Unsolicited manuscripts are received throughout the year and reviewed by Editorial Committee members.

The guest editor forwards all articles to the editor-in-chief and to the managing editors, who copyedit them and return them to the authors for their review. The next steps in the production process—typesetting, proofreading, and overseeing layout, printing, and mailing—are the responsibility of the managing editors and editor-in-chief. After the issue is published, each author receives two complimentary copies.

Typically, the editor-in-chief and managing editors begin working with guest editors about a year in advance. With the exception of the managing

Susan Nichols, editor-in-chief of the Journal of Museum Education, *is program director of Save Outdoor Sculpture!, National Institute for the Conservation of Cultural Property, Washington, D.C.*

editors and the designer, all participants in this effort are volunteers; most Editorial Committee members, guest editors, and authors have other full-time responsibilities.

In late 1991, Museum Education Roundtable will publish volume two of *Museum Education Anthology,* a collection of articles from the journal, 1984 to 1991. The continuous 18-year history of the journal—originally called *Roundtable Reports*—is a tribute to MER, its members, and the journal's readers. The term "sheep to shawl" characterizes the mechanics of churning out the journal but does not capture its collegial spirit. Catch the spirit—and join us in creating a publication that highlights the most current thinking on museum education.

MER News

Annual MER/VAM Workshop

Families in Museums: Theory into Practice
Monday, June 3, 1991
9:00 a.m.–4:00 p.m.
George Mason University, Fairfax, Virginia

Hope Jensen Leichter, director of the Center for the Study of the Family as Educator, Teachers College, Columbia University, will give the keynote address at this year's workshop cosponsored by MER and the Virginia Association of Museums. The workshop is hosted by the Department of Health, Sport, and Leisure Studies at George Mason University.

Following Leichter's talk, panelists will consider how to define and foster a successful family experience in the museum. Panel members will be Jerald Newberry, family and adolescent psychotherapist, Counseling and Training Associates; Steven Newsome, director, Anacostia Museum, Smithsonian Institution, Washington, D.C.; and Samuel Taylor, director of exhibitions, American Museum of Natural History, New York. The afternoon will be devoted to nine concurrent discussion groups and case studies on such topics as what constitutes a family in the 1990s, family systems and communication skills, and developing cultural partnerships for family enrichment.

The workshop is traditionally a popular event, but some spaces may still be available. For information call Colette Waters, (804) 367–1079; Elizabeth Bredin, (703) 719–0853; or Lynn Dierking, (202) 786–2307.

Roundtables on Learning

This series of discussions, moderated by Lynn Dierking, assistant professor of science education, University of Maryland, will continue into the summer months. In addition to readings and discussions, participants will make recommendations for future MER programs on education theory. For further information and a copy of the reading list on which the roundtables are based, or to register for a session, contact Lynn Dierking, 1310 Harbor Rd., Annapolis, Md. 21403, (301) 268–5149 or (202) 786–2307; or Myriam Springuel, SITES, 1100 Jefferson Dr., SW, Room 3146, Washington, D.C. 20560, (202) 357–3371.

Exhibition Development
Friday, June 14, 1991
8:30–10 a.m.
Room 3113, S. Dillon Ripley Center, Smithsonian Institution

The School-Museum Partnership
Wednesday, July 24, 1991
8:30–10 a.m.
Classroom A, National Museum of Natural History

Most programs (with the exception of the MER-VAM workshop) are free to MER members. A $3 contribution is suggested for nonmembers. The Program Committee develops ideas based their own expertise and on the expressed interests of MER members. The committee welcomes suggestions for programs and speakers and invites other MER members to join the group. The Program Committee chair is Myriam Springuel, (202) 357–3371.

Noteworthy

New from the Getty Center

Two new publications from the Getty Center are of special interest to museum educators. *Discipline-Based Art Education: A Curriculum Sampler* provides a wide variety of sample discipline-based teaching units. Designed by teachers for teachers, these units address universal themes and incorporate artwork from a variety of cultures.

Inheriting the Theory: New Voices and Multiple Perspectives on DBAE publishes the proceedings of a seminar at which 130 art and museum educators, scholars, and doctoral students discussed DBAE in relation to current educational issues.

For full ordering information, contact J. Paul Getty Book Distribution Center, P.O. Box 2112, Santa Monica, Calif. 90406; (213) 453–5352.

The Museum as an Integrated System

The Deutsches Museum in Munich is offering its one-week management course, "The Museum as an Integrated System," in English for the first time this summer. For the past two years the course has been offered in German, and its success has led to its extension in English.

The course is designed for museum directors and senior museum officials. It is conducted by the staff of the Deutsches Museum, who present their insights about operating a large museum.

The dates of the course are July 21–26. The total charge of DM 850 includes tuition, accommodations (single or double rooms, dormitory style, on the museum premises), and breakfast each day. Space in the course is limited, and registration must be accompanied by a deposit of DM 500.

For additional details and registration information, write to Dr. Otto Mayr, Generaldirektor, Deutsches Museum Postfach 26 01 02, 8000 Munich 26, Germany; phone 089/2179–313; fax 089/2179–324.

Public Dimension Assessment

The Museum Assessment Programs of the American Association of Museums have recently initiated a third assessment program designed to assess the public's perception of, experience with, and involvement in the museum. MAP III assists a museum in communicating with the public about its collections and its research and interpretive activities.

Like its counterparts, the new Public Dimension Assessment frames its recommendations in relationship to the entire museum. MAP III includes a review of (1) public perception, including mission and planning, audience and attendance, and public relations and marketing; (2) public experience, including concept and content of visitor services and exhibitions and programs; and (3) public involvement, including community participation and human and financial resources.

The benefits of this assessment include a clearer understanding of the museum's image in the community; improved service to the museum's current audience and an increased ability to broaden the museum's audience; insight into developing or improving marketing and public relations; improved scholarly research, public programs, and exhibitions; increased community support for and participation in public activities; and a stronger and more diverse funding base.

The first application deadline is August 16. For full details, write to the Museum Assessment Programs, American Association of Museums, 1225 Eye St., NW, Washington, D.C. 20005; (202) 289–9118.

The MAP staff is also looking for museum professionals who would like to serve as MAP III surveyors. If you are interested, phone (202) 289–9120.

The Denver Art Museum Interpretive Project

The Denver Art Museum spent two and one-half years investigating its novice or lay visitors' art experiences and relative interpretive issues, including esthetics and human psychology. Free copies of the project's 160-page report are available. When the limited supply is exhausted, the price will be $9, including postage and handling. Order from the Denver Art Museum, 100 West 14th Ave. Parkway, Denver, Colo. 80204, care of Katie Russell; (303) 575–2295. Make checks payable to the Denver Art Museum.

Understanding the Visitor's Perspective

What do visitors expect from museums, and how are their expectations met? A consortium of 11 art museums joined forces in a research project involving focus groups of museum visitors to seek answers to this question. Their findings are presented in a publication and an hour-long videotape, both titled *Insights: Museums, Visitors, Attitudes, and Expectations*. The publication includes a summary of the focus group process and project findings, proceedings from a symposium held on the findings, and synopses of new projects resulting from the focus groups. The videotape features an overview of the focus groups and in-depth excerpts of focus group sessions from five participating museums. The Getty Center for Education in the Arts and the J. Paul Getty Museum sponsored the project.

Both the publication and videotape are free of charge; there is a shipping and handling charge of $5. To order, write to the J. Paul Getty Book Distribution Center, GCEA–3, P.O. Box 2112, Santa Monica, Calif. 90406; make check or money order payable to Getty Trust Publications, or include your Visa or MasterCard number with the expiration date. To order by phone using a credit card, call (213) 453–5352.

About the Museum Education Roundtable

The **Museum Education Roundtable**, a nonprofit educational corporation, serves as a forum for communication among professionals in the field. MER seeks to improve educational services in museums and related institutions, to foster communication between museums and their audiences, and to promote professional development.

MER Membership Benefits

- Subscription to the *Journal of Museum Education* published three times yearly
- Monthly program meetings in Washington, D.C.
- Program notes from monthly meetings (on request by writing to MER)
- Voting privileges
- Discounts on MER publications, such as *Museum Education Anthology*
- Announcements of special activities in the Washington, D.C., metropolitan area

Coming in the *Journal of Museum Education*

Fall 1991
Excellence and Equity: The Report of the AAM Task Force on Museum Education, Guest Editor Bonnie Pitman, Deputy Director, University Art Museum, University of California, Berkeley

Winter 1992
The State of Professional Practices

Spring/Summer 1992
The Exhibition as Educator

Membership and Subscription Form

Please enroll me as a MER member for one year and start my subscription to the *Journal of Museum Education.*

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❑ Sustaining $125

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If outside U.S., add $7 to dues or subscription rate.

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